

AD-A118 266

BATTELLE COLUMBUS LABS OH
METALS AND CERAMICS INFORMATION CENTER. (U)
JUL 82 H MINDLIN

F/G 11/2

UNCLASSIFIED

AMMRC-TR-82-45

DLA900-78-C-1715
NL

NL

134

10

• 94-124

END

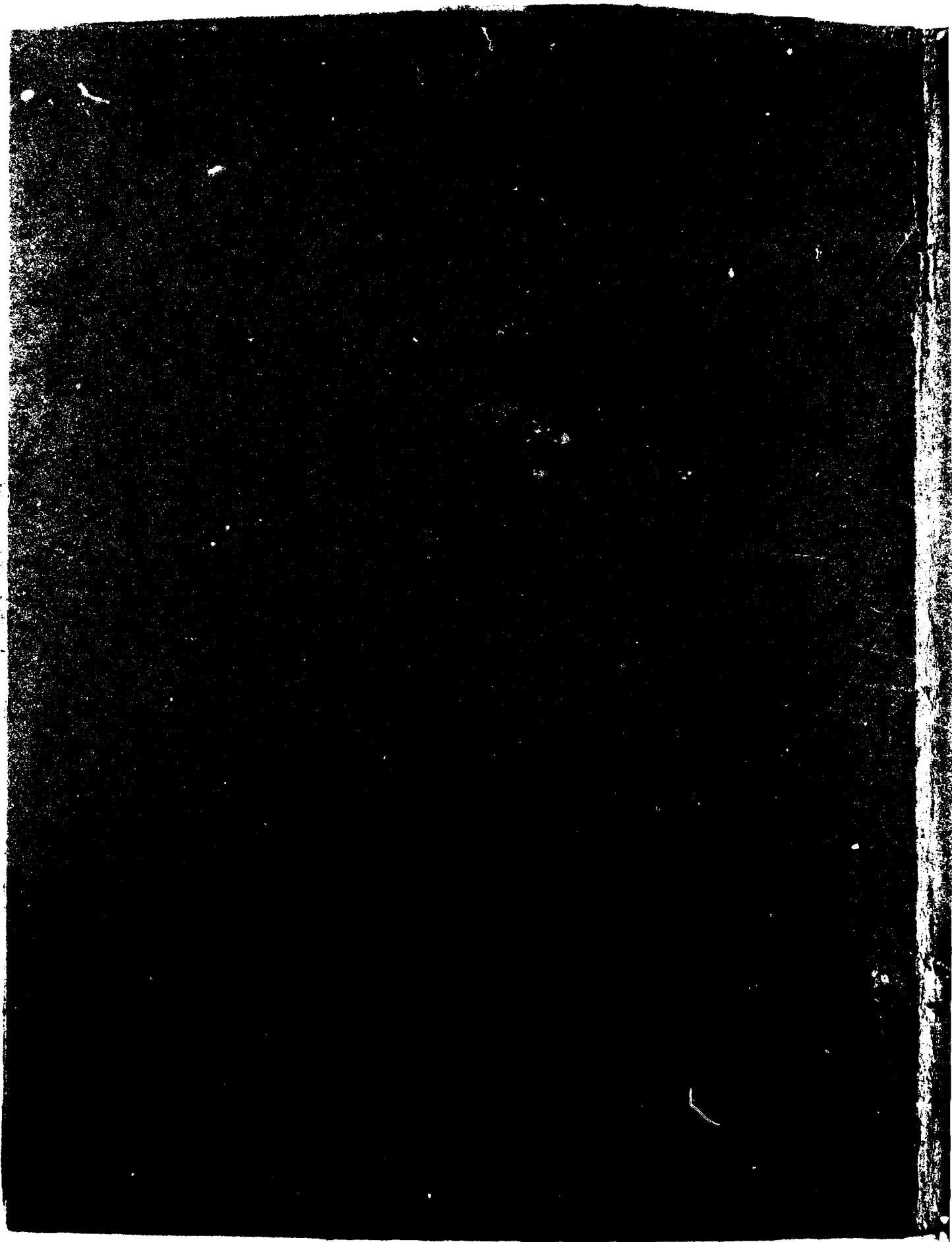
12811

11. 12. 13.

21

011

AD A118266





Battelle

Columbus Laboratories
Metals and Ceramics Information Center
505 King Avenue
Columbus, Ohio 43201
Telephone (614) 424-5000

August 9, 1982

AMMRC
DRXMR-PP/D. W. Seitz
Arsenal Street
Watertown, MA 02172

Dear Mr. Seitz:

Contract No. DLA900-78-C-1715

Two copies of our Fourth Annual Progress Report (May 1981 through April 1982) are enclosed. Data for the Sixteenth Quarter are included in that report.

With the close of the Mechanical Properties Data Center, MCIC assumed responsibility for the "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook". As a result, no new Handbooks will be developed by MCIC.

The problems of rising costs and no new funding were exacerbated by the FY82 budget cut. With some changes in our rate of effort in certain areas, we have managed to maintain the basic MCIC functions.

We appreciate your continued help and support. Copies of this Annual Report are being sent to the distribution shown on the attached page.

Very truly yours,

Harold Mindlin
Program Manager

HM:psb

Enc.

Attachment

DISTRIBUTION LIST

Mr. David W. Seitz
DRXMR-PP/COTR (2)
Army Materials and Mechanics Research
Center
Watertown, MA 02172

Ms. Sara Williams/EC
Defense Electronics Supply Center
1507 Wilmington Pike
Dayton, OH 45401

Mr. James Pendergast
Defense Technical Information Center/
DTIC-AI
Cameron Station (2)
Alexandria, VA 22314

Dr. John F. Kahles
Machinability Data Center
3980 Rosslyn Drive
Cincinnati, OH 45209

Dr. George J. Zissis
Infrared Information and Analysis Center
Environmental Research Institute
of Michigan
Box 8618
Ann Arbor, MI 48107

Mr. Ronald D. Brown
Chemical Propulsion Information Agency
Applied Physics Laboratory
Johns Hopkins Road
Laurel, MD 20707

Mr. Henry C. Pusey
Shock and Vibration Information Center
Naval Research Laboratory, Code 5804
Washington, DC 20375

Dr. Charles E. Ehrenfried
Reliability Analysis Center, RBRAC
Griffiss AFB, NY 13441

Dr. Richard Smith
Nondestructive Testing Information
Analysis Center
Southwest Research Institute
6220 Culebra Road, P.O. Drawer 28510
San Antonio, TX 78284

Director
Thermophysical Properties Research Center
Purdue University
2595 Yeager Road
West Lafayette, IN 47906

Mr. Harry Pegly
Plastics Technical Evaluation Center
U.S. Army Armament Research and
Development Command
Dover, NJ 07801

Mr. Charles W. Smoots
GACIAC
IIT Research Institute
10 West 34th Street
Chicago, IL 60616

Mr. Jerome Persh
Staff Specialist, Materials and Structures
Office of Under Secretary of Defense
for Research and Engineering (ET)
Room 3D1089, The Pentagon
Washington, DC 20301

✓ Defense Technical Information Center
Cameron Station (2)
Alexandria, VA 22314

DCASMA
ATTN: Administrative Contracting Officer
Contract No. DLA900-78-C-1715
c/o Defense Electronics Supply Center
Building No. 5
Dayton, OH 45444

Chief, Technical Library (2)
Army Materials and Mechanics Research Center
Watertown, MA 02172

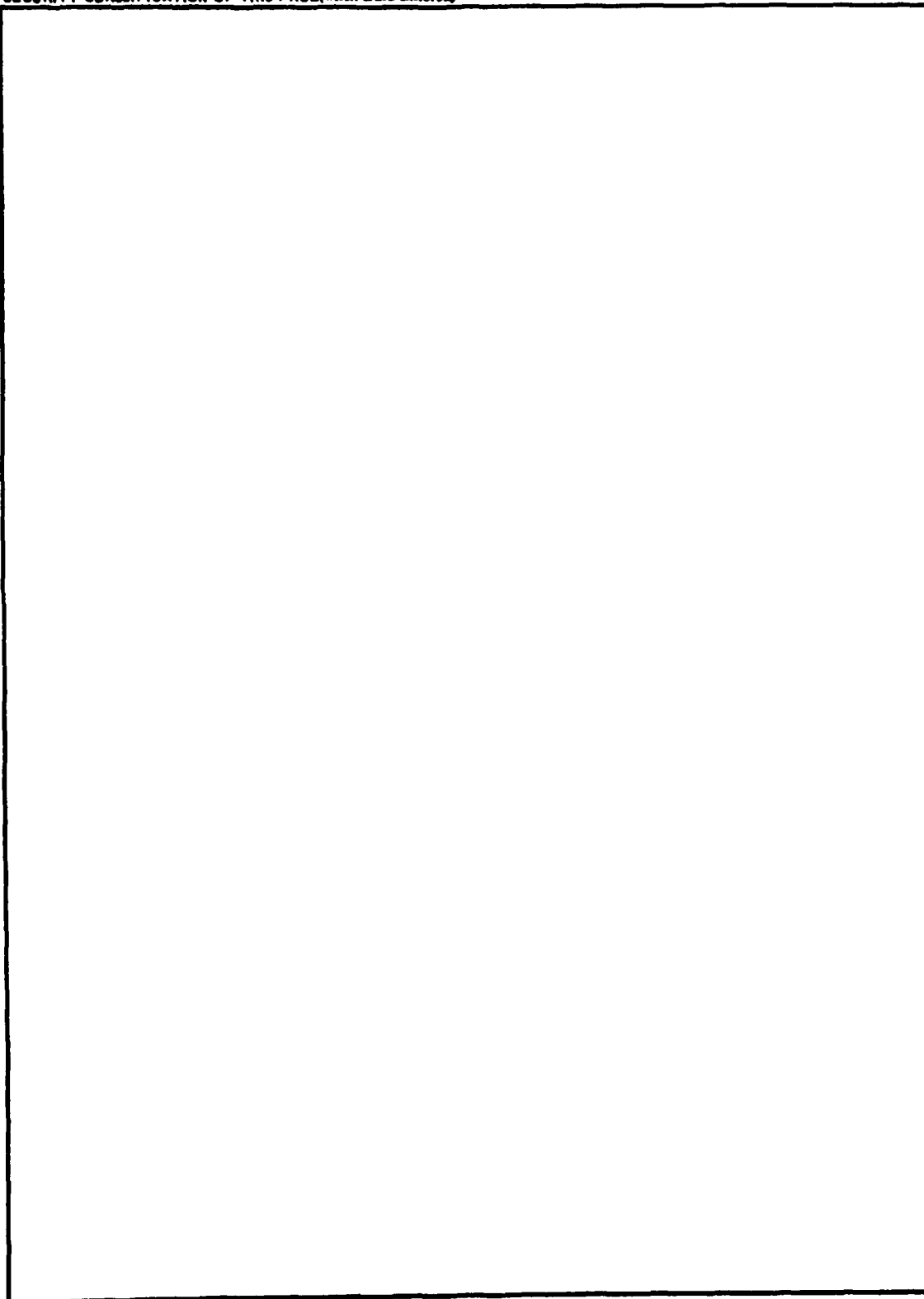
Mr. Louis Gonzalez, Manager
Metal Matrix Composites IAC
K-TEMPO
816 State Street
P.O. Drawer QQ
Santa Barbara, CA 93102

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM |
|--|-------------------------------------|---|
| 1. REPORT NUMBER AMMRC TR 82-46 | 2. GOVT ACCESSION NO. AR-A118266 | 3. RECIPIENT'S CATALOG NUMBER |
| 4. TITLE (and Subtitle) Annual Report Metals and Ceramics Information Center | | 5. TYPE OF REPORT & PERIOD COVERED Annual Report 5/1/81 through 4/30/82 |
| 7. AUTHOR(s) H. Mindlin, Manager | | 6. PERFORMING ORG. REPORT NUMBER - |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS Battelle Columbus Laboratories 505 King Avenue Columbus, Ohio 43201 | | 8. CONTRACT OR GRANT NUMBER(s) DLA900-78-C-1715 |
| 11. CONTROLLING OFFICE NAME AND ADDRESS Defense Logistics Agency Cameron Station Alexandria, Virginia 22314 | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Army Materials and Mechanics Research Center Attn: DRXMR-P Watertown, Massachusetts 02172 | | 12. REPORT DATE July 1982 |
| | | 13. NUMBER OF PAGES |
| | | 15. SECURITY CLASS. (of this report) Unclassified |
| | | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |
| 16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.. | | |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) | | |
| 18. SUPPLEMENTARY NOTES | | |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Technical Information Center DoD Information Analysis Center Metals Ceramics Information Retrieval | | |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report reviews the continuing operations of the Metals and Ceramics Information Center for the Sixteenth Quarter and the annual period of May 1, 1981 through April 30, 1982. Activities and coverage of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included. | | |

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)



SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

TABLE OF CONTENTS

| | Page |
|---|------|
| SUMMARY..... | i |
| PREFACE..... | ii |
| INTRODUCTION..... | 1 |
| Scope and Purposes of MCIC..... | 2 |
| Organization of the MCIC Program..... | 2 |
| INFORMATION OPERATIONS..... | 4 |
| Acquisition of Information..... | 4 |
| RDT&E Input..... | 5 |
| On-Line Usage of the MCIC Database..... | 5 |
| TECHNICAL REPORTS AND HANDBOOKS..... | 7 |
| User Feedback..... | 7 |
| Sales..... | 10 |
| CURRENT AWARENESS BULLETIN..... | 10 |
| INQUIRY SERVICES..... | 11 |
| Technical Inquiries..... | 11 |
| Nontechnical Inquiries..... | 15 |
| SPECIAL STUDIES/TASKS..... | 16 |
| MARKETING AND PROMOTION..... | 19 |
| Meetings Attended..... | 21 |
| Visitors..... | 21 |
| INCOME AND COST RECOVERY..... | 22 |
| Mailings..... | 25 |
| Future Planning..... | 25 |

TABLE OF CONTENTS
(Continued)

| | Page |
|---|------|
| APPENDIX A | |
| CONTRACT STATUS REPORTS. | A-1 |
| APPENDIX B | |
| TECHNICAL PERSONNEL ASSOCIATED WITH MCIC PRODUCTS AND SERVICES (SIXTEENTH QUARTER) | B-1 |
| APPENDIX C | |
| ORGANIZATIONS SERVED BY MCIC (SIXTEENTH QUARTER) | C-1 |
| APPENDIX D | |
| SALES OF MCIC REPORTS, HANDBOOKS, AND SPECIAL REPORTS | D-1 |
| Fourth Year Annual Sales | D-1 |
| Sixteenth Quarter Sales | D-3 |

LIST OF TABLES

| | | |
|----------|--|----|
| Table 1. | MCIC Acquisitions, May 1981-April 1982. | 6 |
| Table 2. | Quarterly Statistics on the Use of the MCIC Database Via DROLS for the Fourth Year Contract | 8 |
| Table 3. | Status of MCIC Technical Publications (April 30, 1982) | 9 |
| Table 4. | Publication Statistics of the Current Awareness Bulletin for the Period, May 1981-April 1982 | 12 |
| Table 5. | Technical Inquiry Statistics for the Period, May 1981-April 1982. | 13 |
| Table 6. | Classification of Technical Inquiries Processed by MCIC During the Period May 1981-April 1982 | 14 |
| Table 7. | Nontechnical Inquiry Responses | 15 |
| Table 8. | Summary of Special Studies | 17 |
| Table 9. | Promotion Efforts of MCIC Publications (Sixteenth Quarter) | 20 |

LIST OF TABLES
(Continued)

| | Page |
|--|------|
| Table 10. Summary of Basic Funding and Cost Recovery for May 1981 Through April 1982 | 23 |
| Table 11. Income Summary for Annual Period (May 1981-April 1982) | 24 |
| Table 12. Annual Postage Statistics (May 1981-April 1982) | 25 |
| Table A-1. Financial Statistics (Sixteenth Quarter) | A-1 |
| Table A-2. Fourth Annual | A-3 |
| Table A-3. Four-Year Total | A-4 |
| Table C-1. Organizations Serviced by MCIC | C-1 |
| Table D-1. MCIC Annual Publications Listing | D-1 |
| Table D-2. MCIC Annual Publications Listing | D-2 |
| Table D-3. MCIC Annual Publications Listing | D-2 |
| Table D-4. MCIC Quarterly Publications Listing | D-3 |
| Table D-5. MCIC Quarterly Publications Listing | D-4 |
| Table D-6. MCIC Quarterly Publications Listing | D-4 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1. Battelle-Columbus Research Departments | 3 |
| Figure 2. Six-Year Financial Summary of MCIC Basic Operations | 26 |

| | |
|--------------------|-------------------------------------|
| Accession For | |
| NTIS GRA&I | <input checked="" type="checkbox"/> |
| DTIC TAB | <input type="checkbox"/> |
| Unannounced | <input type="checkbox"/> |
| Justification | |
| By _____ | |
| Distribution/ | |
| Availability Codes | |
| Dist | Avail and/or Special |
| A | |



SUMMARY

The Metals and Ceramics Information Center (MCIC) is one of the technical Information Analysis Centers (IAC's) chartered and sponsored by the Department of Defense (DoD). The objective of the Center is to increase the productivity of scientists, engineers, and technicians engaged in scientific and engineering programs for the DoD. The Center is responsible for the collection, review, analysis, appraisal and summary of the available scientific and technical information and data on selected metals and ceramics. The resources and capabilities of MCIC, a full-service IAC, are also available to the technical community at large through an extensive program of products and services.

This fourth Annual Report on Contract No. DLA900-78-C-1715 covers the program activities for the period 1 May 1981 through 30 April 1982. Operating statistics and contract status reports are provided for the Sixteenth Quarter and the complete reporting period. During this 12-month contract period, the Center met its contractual goal for recovery of products and service costs. Actual annual income from the sale of products and services was \$146,475; income from special tasks and related activities was \$469,134. This total income of \$615,609 resulted in a cost recovery of 84.6 percent relative to the annual funding rate of \$700,833. (Funding for FY 82 has been reduced.) A substantial portion of MCIC's income continues to come from the special studies and tasks undertaken for Federal agencies; 11 studies/tasks were conducted in this report period. The operations of the Center have been affected by rising costs, but basic services are being maintained.

In addition to the information acquisition and processing efforts, technical publications and inquiry services remain the major activities in MCIC's basic program. As of 1 April 1982, MCIC was given responsibility for the publication and maintenance of the "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook". The publications completed, reprinted or in process consist of:

- 12 Current Awareness Bulletins (CAB)
- 5 technical reports
- 2 new handbooks.

The Center continued to give high priority to responses for technical assistance (of these incoming requests, 305 were processed and 94 were cancelled). Of the assigned requests, 63 were subject to user charge and 242 were answered free of charge.

Utilizing the RDT&E On-Line System at the Defense Technical Information Center, the information base added 3,343 technical documents to the MCIC information system. Included in the annual total are 755 documents accessed in the Sixteenth Quarter. Our inventory of technical documents now lists over 130,000 items.

Future plans are for the cost-effective continuation of the primary and established products and services of the Center necessary to attain MCIC's goals and objectives.

PREFACE

This report was prepared by the Metals and Ceramics Information Center (MCIC) which is operated by Battelle's Columbus Laboratories, 505 King Avenue, Columbus, Ohio 43201, under Contract DLA900-78-C-1715. The MCIC program has been administered under the direction of the Defense Logistics Agency with technical supervision by the Army Materials and Mechanics Research Center, Watertown, Massachusetts. Mr. Raymond Farrow was the acting Contracting Officer's Technical Representative until Mr. David W. Seitz was named to the position in October 1981.

This annual report covers the period of work May 1, 1981, through April 30, 1982. The Sixteenth Quarter statistics (February 1982 through April 1982) are also included. The report was released by the author July 1982.

The MCIC and Battelle management express their appreciation to those many sponsor representatives whose advice, guidance and support have been essential to the continuing success of the MCIC program. Particular mention should be made of the significant contributions of

Mr. James Pendergast, DTIC
Mr. Raymond Farrow, AMMRC
Mr. David W. Seitz, AMMRC

Ms. Sara Williams, DESC
Mr. Jerome Persh, OUSDRE

**ANNUAL REPORT
(May, 1981 through April, 1982)**

and

**Sixteenth Quarterly Progress Report
(February through April, 1982)**

on the

**OPERATION OF THE METALS AND CERAMICS
INFORMATION CENTER**

to

**ARMY MATERIALS AND MECHANICS
RESEARCH CENTER**

INTRODUCTION

In 1971, the Metals and Ceramics Information Center (MCIC) was formed through the merger of the Defense Metals Information Center (DMIC) and the Defense Ceramic Information Center (DCIC). The former had been operated by Battelle since the mid-1950s, and the latter since 1967. Thus, MCIC is continuing more than 2 decades of service to the defense materials community.

As one of the family of technical information analysis centers sponsored by the Department of Defense, MCIC's purpose is to provide an authoritative source of current engineering and scientific information and data on metal and ceramic materials and composites containing those materials which may be applicable to defense systems. Although intended primarily for service to agencies of DoD and their contractors, MCIC's resources are available to the technical community at large, thus contributing to the transfer and adaptation of defense-developed technology for commercial and consumer use.

With the close of the Mechanical Properties Data Center (MPDC) in April 1982, MCIC assumed the responsibility for the continued publication of two technically accepted MPDC Handbooks — "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook".

This report, summarizing MCIC activities for the period May 1, 1981, through April 30, 1982, the fourth 12 months under Contract DLA900-78-C-1715, provides a summary of the scope, objectives and organization of MCIC, its information processing and services, and a discussion of future plans for the maintenance of the Center's resource of technical knowledge in metals and ceramics. Statistical summaries of expenditures for the various activities conducted in the Sixteenth Quarter and the four-year contract period are given in Appendix A (DSAH Form 1261).

One additional year of Battelle's operation of MCIC is covered under the current contract.

Scope and Purposes of MCIC

MCIC is recognized as a formal full-service Department of Defense Information Analysis Center (IAC). As such, under the contract reported on herein, its objectives have been to provide scientific and technical information analysis services to the Department of Defense components, contractors and grantees, U.S. Government agencies and their contractors, and to the private sector. The scope includes metals and ceramics in various forms (i.e., bulk, coating, etc.) that are utilized in defense systems and hardware with emphasis on critical structural applications and/or stringent environments.

The Center collects and provides its users with information on the design characteristics, applications, processing, fabrication, quality control, environmental effects, test methods, sources, suppliers, and specifications for materials within its scope.

To accomplish these objectives, the MCIC program consists of five principal functions:

- (1) Maintenance of a comprehensive, up-to-date, authoritative technical information base
- (2) Responses to requests for technical advice and assistance from Government agencies, contractors, suppliers, and the public sector
- (3) Issuance of a monthly Current Awareness Bulletin covering metals and ceramic technology on a variety of subjects
- (4) Publication of technical reports, handbooks, databooks, critical reviews and technology assessments appraising the state of the art of metals, ceramics, and related processes
- (5) Conduct a variety of special studies for DoD agencies and other departments of the Federal government.

Organization of the MCIC Program

The Metals and Ceramics Information Center is assigned to the Materials Information Program Office of Battelle's Columbus Laboratories. The Manager of that office also serves as Director of MCIC. Members of the permanent MCIC staff are drawn from Battelle's Materials Department and Computer, Information Systems, and Education Department. That full-time staff averages 11 engineers, information specialists and secretarial assistants, who are supported by engineers and scientists from throughout the Columbus Laboratories, contributing on a part-time basis as needed. The fundamental strength of the MCIC program lies in this team of qualified authorities, whose experience and daily participation in advanced materials research provides the Center's users with expert technical advice and authoritative state-of-the-art publications (see Figure 1).

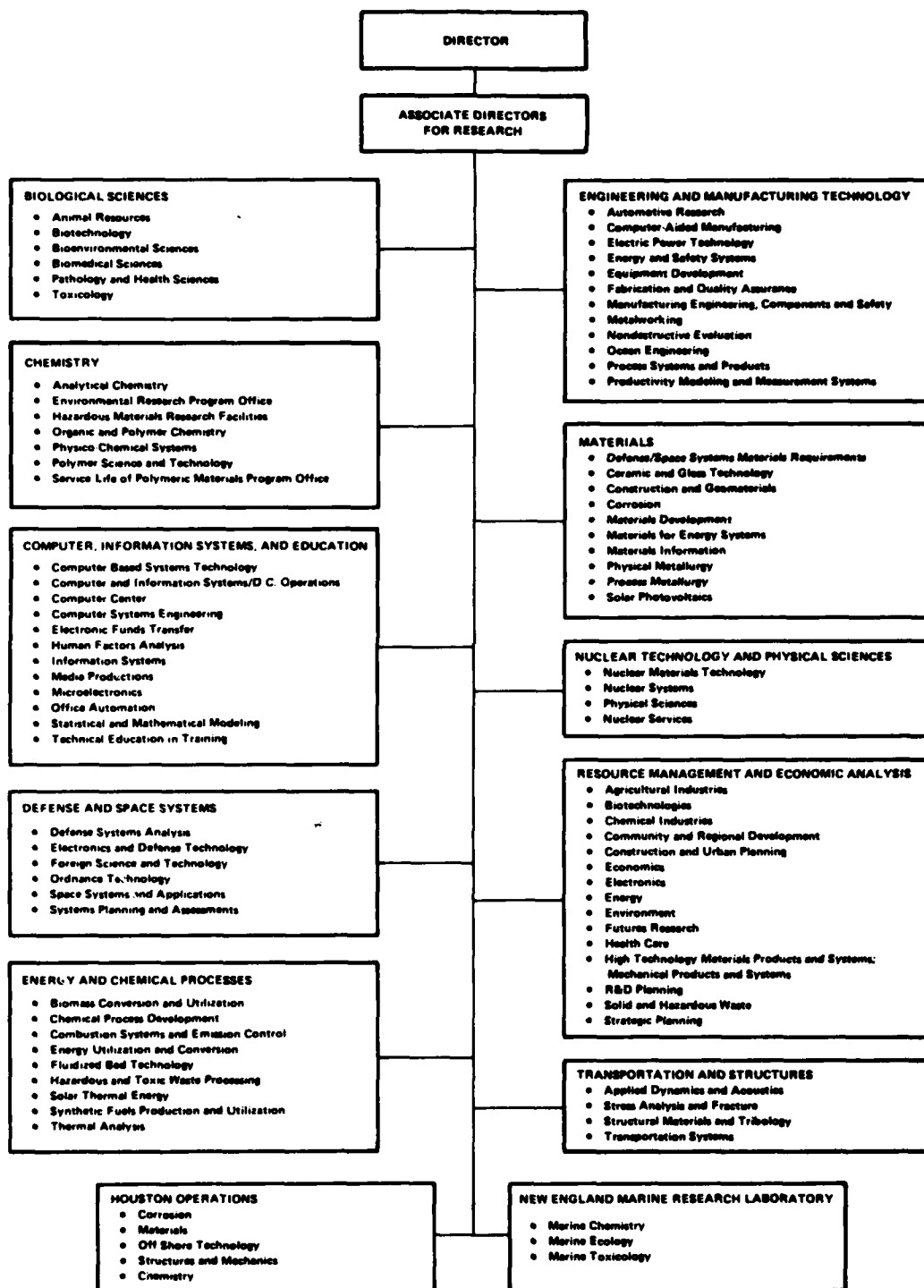


FIGURE 1. BATTELLE-COLUMBUS RESEARCH DEPARTMENTS

Key MCIC staff assigned to manage the basic functions of the Center are:

| | |
|--|---|
| Program Manager and Coordinator of Special Studies | Harold Mindlin |
| Associate Manager | James F. Lynch (Retired 31 December 1981) |
| Technical Inquiries and Current Awareness Bulletin | Roy W. Endebrock (Retired 30 April 1982) Frank J. Jelinek |
| Coordination of Marketing, Promotion, and Publication | Harold J. Hucek |
| Information Operations | Helen Pestel |

INFORMATION OPERATIONS

An information base is maintained by MCIC to provide technical documentation needed by staff scientists and engineers who compile the various products of the Center and to provide a rapid, inexpensive retrieval mechanism to support the Center's technical inquiry service and special studies. The information base contains over 130,000 documents collected and reviewed since 1955 under MCIC and its two predecessors, DMIC (Defense Metals Information Center) and DCIC (Defense Ceramic Information Center).

The MCIC information base is maintained in two separate retrieval systems. The items collected prior to 1971 are maintained in a manual system utilizing extracts of documents which are filed in multiple locations by key words (index terms). The MCIC computerized file was initiated in 1971 utilizing the Battelle BASIS Database Management System. In March 1975, the computerized database was moved to the Defense Technical Information Center's Defense RDT&E On-Line System (DROLS). As of April 28, 1982 (Tab cycle 82-11), the computerized file contains 43,569 references of which 29,219 are unique to the MCIC program, and 14,350 are DTIC holdings that were modified by enriched indexing.

Acquisition of Information

During the fourth year of the current MCIC contract, 4055 documents were acquired and reviewed for input into the MCIC database. Of these, 597 documents were rejected because they were not considered relevant to the MCIC scope or because they duplicated information presently in the information base. During the Sixteenth Quarter, 971 documents were reviewed and 755 documents were accessioned. The reduced rate of accessioning in the Sixteenth Quarter is a result of the funding reduction for the MCIC Program in FY82. The reduced accessioning rate has been accomplished by removing all composite materials except carbon/carbon composites from the scope and by increasing the size of the backlog of documents waiting for review for inclusion to the database.

The type and number of documents accessioned by MCIC for the database in the Sixteenth Quarter and for the year are shown in Table 1. Included are journal articles, government reports, conference papers and miscellaneous sources such as books, trade literature and internal papers. (The table also breaks down the documents accessioned during the Thirteenth through the Sixteenth Quarter of the present contract.)

Documents related to metals and metallurgy represent 84.7 percent of the annual input (91.7 percent for the Sixteenth Quarter), ceramics represent 5.9 percent of the annual input (5.0 percent for the Sixteenth Quarter), and composites represent 9.4 percent of the annual input. 137 of the composites documents were acquired to support the Carbon/Carbon Data Bank, a special project for MCIC. During the Sixteenth Quarter only documents on carbon/carbon composites were accepted for the composites portion of the input.

Identification and acquisition of pertinent technical literature are aggressively pursued by the MCIC staff. The primary source of reports generated by DoD and other Government agencies is the contractors or agencies producing the reports. Receiving reports on direct distribution avoids time delays in receipt of this information from secondary sources and allows the Center to have access to interim progress reports not distributed to secondary sources.

Pertinent reports not received on direct distribution are identified and ordered from Government abstracting services including DTIC's Technical Abstracts Bulletin (TAB), NTIS's Government Report Abstracts (GRA), NASA's Scientific and Technical Aerospace Reports (STAR), and DoE's Energy Research Abstracts (ERA).

Journal articles and technical papers are selected by screening materials entering the Battelle Library on a daily basis. This source is supplemented by subscribing to key journals and ordering of individual technical papers by MCIC.

One to two percent of the Center's acquisitions are from sources such as books, trade literature, and trip reports and memoranda on MCIC staff activities which contain technical data.

RDT&E Input

A total of 2655 of the 3343 documents accessioned this contract year were processed into MCIC's dedicated database at DTIC (DROLS). The remaining 688 documents were already in the DTIC collection. The DTIC records for these reports were supplemented with the MCIC accession number and enriched indexing. Sixteenth Quarter statistics for DROLS input are: 604 items added to the MCIC series, 151 DTIC records augmented with MCIC numbers and enriched indexing.

On-Line Usage of the MCIC Database

On January 16, 1980, the MCIC database became available to all sites having dedicated on-line terminals to the DROLS. In mid-October, 1980, the database became available to dial-up subscribers of DROLS. Surprisingly few problems regarding the use of our database have been brought to the attention of the MCIC staff since the addition of both user groups. MCIC database input staff have attended both the Regional and Annual DROLS Users meetings to be available to assist users of the MCIC and other IAC databases.

TABLE 1. MCIC ACQUISITIONS, MAY 1981-APRIL 1982

| Document Type | Quarterly Period | | | | Annual Total | Percent 16th Quarter | Percent Annual |
|-------------------|------------------|------------|---------------|-------------|-----------------|-------------------------|-------------------|
| | May-Jun 81 | Jul-Oct 81 | Nov 81-Jan 82 | Feb-Apr 82* | | | |
| Journal Articles | 362 | 472 | 425 | 344 | 1,603 | 45.5 | 48.0 |
| Technical Reports | (348) | (351) | (205) | (250) | (1,154) | (33.1) | (34.4) |
| Air Force | 92 | 79 | 57 | 56 | 284 | 7.4 | 8.5 |
| Army | 41 | 62 | 34 | 28 | 165 | 3.7 | 4.9 |
| Navy | 74 | 80 | 52 | 75 | 281 | 9.9 | 8.4 |
| Other DoD | 13 | 24 | 10 | 11 | 58 | 1.5 | 1.7 |
| NASA | 49 | 50 | 23 | 22 | 144 | 2.9 | 4.3 |
| DOE/ERDA | 53 | 34 | 19 | 36 | 142 | 4.8 | 4.2 |
| Other | 26 | 22 | 10 | 22 | 80 | 2.9 | 2.4 |
| Technical Papers | 251 | 88 | 61 | 150 | 550 | 19.9 | 16.5 |
| Miscellaneous | 7 | 7 | 11 | 11 | 36 | 1.5 | 1.1 |
| Total | 988 | 918 | 702 | 755 | 3,343 | 100.0 | 100.0 |

*Sixteenth Quarter

Table 2 summarizes the use of the database by type of organization for all records displayed or ordered from the dedicated or dial-up sites for the Thirteenth through Sixteenth Quarters. The number of users and records retrieved from the MCIC database continue to grow due to the addition of new dial-up users to the DROLS system.

TECHNICAL REPORTS AND HANDBOOKS

Information transfer on advances in materials technology within MCIC's scope and related to applications in defense systems and hardware is an important activity of this program. In response to needs of Government, particularly DoD, as well as industrial and academic communities, a variety of publications is prepared by the Center. The archival documents include handbooks/databooks and technical reports which are represented in state-of-the-art reports, proceedings of conferences, critical reviews or technology assessments, as well as comprehensive listings of available literature as related to identifiable areas of interest.

No technical reports or handbooks/databooks were published in the Sixteenth Quarterly period. However, one state-of-the-art report was initiated and processing was continued on four publications.

A status summary of the Center's publications activity during the past year (May 1981-April 1982) is given in Table 3. In this annual period two handbooks were published and two databook compilations were discontinued because of funding restrictions. Also, three state-of-the-art reports were published, and two were initiated.

As of April 1, 1982, with the demise of the Mechanical Properties Data Center (MPDC), MCIC assumed the responsibility for maintaining two valuable handbooks formerly published by MPDC. These two handbooks, the "Aerospace Structural Metals Handbook (ASMH)" and the "Structural Alloys Handbook (SAH)" along with their annual supplement service will represent the major MCIC handbook/databook effort in the future and will be covered in subsequent MCIC reports. The ASMH is updated quarterly; the SAH semiannually.

A listing of Battelle personnel who contributed to these publications is given in Appendix B.

User Feedback

A continuing effort to determine user satisfaction with MCIC's publications has been in effect since September, 1977, in accordance with contract requirements. The MCIC user evaluation form, shown in previous annual reports, is a modified and approved version of the DLA suggested form. It is included in technical reports and handbooks purchased from MCIC and includes a business return address to MCIC. All original forms received by MCIC are copied and forwarded to DLA. Although this is a reversal of procedure suggested by DLA, it provides MCIC with a more rapid insight of user responses.

During this annual period 25 evaluation forms for 12 handbooks, 13 reports and the CAB were received. The returns represent about 1.3 percent of the number of documents sold directly by MCIC. All returns indicated satisfaction with MCIC publications.

TABLE 2. QUARTERLY STATISTICS ON THE USE OF THE MCIC DATABASE VIA DROLS
FOR THE FOURTH CONTRACT YEAR(a)

| Class of Users | Thirteenth Quarter | | | Fourteenth Quarter | | | Fifteenth Quarter | | | Sixteenth Quarter | | | 16th Quarterly Totals | | |
|------------------|--------------------|--------------|-------------------|--------------------|--------------|-------------------|-------------------|--------------|-------------------|-------------------|--------------|-------------------|-----------------------|--------------|-------------------|
| | Records Retrieved | | | Records Retrieved | | | Records Retrieved | | | Records Retrieved | | | Records Retrieved | | |
| | Avg. No. of Sites | No. of Sites | Avg. No. of Sites | Avg. No. of Sites | No. of Sites | Avg. No. of Sites | Avg. No. of Sites | No. of Sites | Avg. No. of Sites | Avg. No. of Sites | No. of Sites | Avg. No. of Sites | Avg. No. of Sites | No. of Sites | Avg. No. of Sites |
| Air Force | 7.7 | 221 | 8.3 | 314 | 410 | 10.3 | 116 | 13 | 94 | 9 | 53 | 10.7 | 263 | | |
| Army | 21.3 | 903 | 22.3 | 535 | 455 | 19.7 | 155 | 28 | 306 | 25 | 345 | 25.3 | 806 | | |
| Navy | 13.7 | 418 | 14.3 | 437 | 352 | 11.0 | 137 | 13 | 334 | 16 | 196 | 14.3 | 667 | | |
| Other Government | 7.3 | 271 | 8.3 | 420 | 167 | 8.0 | 35 | 4 | 9 | 6 | 57 | 4.7 | 101 | | |
| Industrial | 34.0 | 1,822 | 40.0 | 2,804 | 1,726 | 32.0 | 460 | 50 | 833 | 48 | 653 | 43.7 | 1,946 | | |
| DTIC | 4.7 | 1,220 | 5.0 | 1,139 | 1,290 | 4.0 | 287 | 6 | 512 | 8 | 672 | 6.0 | 1,471 | | |
| Other IACS | 3.3 | 480 | 3.7 | 886 | 452 | 3.7 | 48 | 4 | 100 | 3 | 70 | 3.3 | 218 | | |
| Total Other | 92.0 | 5,335 | 99.9 | 6,335 | 4,852 | 88.7 | 1,238 | 118 | 2,188 | 115 | 2,046 | 108.0 | 5,472 | | |
| MCIC | 1.0 | 3,814 | 1.0 | 2,820 | 1,862 | 1.0 | 667 | 1 | 1,430 | 1 | 1,035 | 1.0 | 3,132 | | |
| Total | 93.0 | 9,149 | 100.9 | 9,155 | 6,714 | 89.7 | 1,905 | 119 | 3,618 | 116 | 3,081 | 109.0 | 8,604 | | |

(a) As measured by the records displayed by users with both on-line displays and orders.

TABLE 3. STATUS OF MCIC TECHNICAL PUBLICATIONS (APRIL 30, 1982)

| Publications | Activity Status ⁽¹⁾ | Estimated Cost to Complete, \$ | Publication Date | | Remarks |
|--|--------------------------------|--------------------------------|------------------|---------|--|
| | | | Previous | Revised | |
| <u>Handbooks/Databooks</u> | | | | | |
| <u>Published</u> | | | | | |
| Engineering Property Data on Selected Ceramics, Volume III, Single Oxides, HB-07V3 | — | — | — | — | Published August, 1981 |
| International Alloy Compositions, Volume III, Aluminum, HB-09V3 | — | — | — | — | Published May, 1981 |
| <u>In Process</u> | | | | | |
| International Alloy Compositions, and Designations, Volume IV, Copper, HB-09V4 | — | — | — | — | Discontinued |
| Engineering Property Data on Selected Ceramics, Volume IV, Mixed Oxides, HB-07V4 | — | — | — | — | Discontinued |
| Aerospace Structural Metals Handbook (ASMH) | TP | — | — | — | Annual supplement services are continuing on both publications |
| Structural Alloys Handbook (SAH) | TP | — | — | — | Annual supplement services are continuing on both publications |
| <u>Technical Reports</u> | | | | | |
| <u>Published</u> | | | | | |
| Corrosion Fatigue in Marine Environments | — | — | — | — | Published September, 1981 |
| Rapid Solidification of Metals | — | — | — | — | Published October, 1981 |
| Technological Advances in Joining | — | — | — | — | Published December, 1981 |
| <u>In Process</u> | | | | | |
| Revision and Update of Hot Isostatic Processing | TP | 40,000 | — | 8/82 | In Completion |
| Laser Processing of Materials | TP | 50,000 | — | 3/83 | In Completion |
| <u>Proposed</u> | | | | | |
| Isothermal, Precision Forging | — | 30,000 | — | — | — |
| Surface Analysis of Thin Protective Films on High-Performance Alloys | — | 45,000 | — | — | — |

(1) Legend: TP - technical preparation, TR - technical review, E - editing, P - publication.

Analysis of the forms showed that the use rate for individual items varied from two times per year to five times per week with the average about 50 times per year. The savings realized from use of the publications ranged from \$100 per year to over \$10,000 with the average savings calculated to be about \$4,000 per year. The number of projects using MCIC publications varied from two to greater than ten (the average was 4.5 projects). Many users requested more detail, but this appeared to be related to a particular individual's need and not amenable in the overall compilation of the document.

In general, this limited evaluation of MCIC reports, handbooks, and databooks indicates that a publication is useful to four projects/tasks about 50 times per year (once per week) and saves the user about \$3,000 per year. Conservatively, the evaluation means that the 1918 MCIC publications sold in the U.S. during the past year were used about 60,000 times and saved the Government about \$6 million on projects/tasks. Thus, the Department of Defense has realized a return on investment of about 10 to 1 for MCIC on publications alone.

Sales

Although sales of publications have increased slightly during this contract year, the publication of several new titles within the past year and the sale of the two former MPDC databooks (ASMH and SAH) should provide an even greater increase in sales activities during the next year.

CURRENT AWARENESS BULLETIN

The MCIC "Current Awareness Bulletin" (CAB) is designed to fulfill the MCIC contract requirement to alert periodically its users to important technical developments within the Center's materials, properties, and processes scope. Presently, the CAB is published monthly. Those scientists and engineers at Battelle's Columbus Laboratories with special expertise in a materials field present special articles covering technical meetings or state of the art of technical subjects of particular interest to the DoD materials community. They also present highlights of selected current MCIC acquisitions. In addition, a special news section features items of interest to users. The CAB format may include the following material:

LEAD ARTICLE(S)

METALS

- Light Metals
- Rapidly Solidified Alloys
- Steels
- Stainless Steels
- Superalloys
- Refractory Metals
- Metals Fabrication
- (Metalworking, Joining)
- Testing-Method Evaluation

CORROSION/COMPATIBILITY

CERAMICS

- Structural
- Refractory
- Special Glasses
- Electronic
- Carbon-Graphite

MCIC NEWS

- Meetings/Symposia
- Call for Papers
- Recent Reports and Books
- R&D Contracts

The CAB is provided upon written request without charge primarily to U.S.-based users of the Center. Updating of the distribution list during the year has been based on the supposition that recipients will either cancel subscriptions or that undelivered CAB's will be returned. Presently (April 30, 1982), the distribution list has about 3,400 subscribers.

Publication statistics of CAB for this annual reporting period (including the Sixteenth Quarter) are given in Table 4. A total of 12 issues (Numbers 99-110) were published. These represent a total of 141 pages (which include NEWS sections), 179 digests of technical accessions, and 17 lead articles or meeting reports.

In addition to CAB, a semi-annual periodical co-sponsored by the Metals and Ceramics Information Center and the Metal Properties Council (MPC) has been published and distributed free of charge to MCIC users for many years. Entitled "MCIC/MPC Review of the Low-Temperature Properties of Metals", it has been authored by Mr. J. E. Campbell, an MCIC consultant and former Battelle staff member. The title is descriptive of the scope of materials accessions covered in this semiannual publication. During this reporting period, two publications were issued and distributed (July 22 and December 21, 1981); 22 references on the subject were reviewed.

The Battelle personnel who contributed to the CAB publications in the Sixteenth Quarter are listed in Appendix B. The contributors to previous issues are listed in previous quarterly reports of the contract period.

INQUIRY SERVICES

Technical Inquiries

A technical-inquiry service, designed primarily for the use of the Department of Defense, its agencies, and its contractors, has been provided by the Metals and Ceramics Information Center (MCIC) for many years. MCIC has been distinguished as an Information Analysis Center by its rapid-response service made possible by the availability of a select group of skilled scientists and specialists of the Battelle Columbus Laboratories. By placing the inquirer in direct contact with an appropriate technical authority, his answers can be provided to the degree of depth required. Answers may be executed through the use of telephone discussions, on-line computer printouts, letter reports, on-site visits, and MCIC-published reports and handbooks.

Table 5 presents a summary of the statistics for the technical inquiries processed during the 12-month period, May 1981 through April 1982. Classification of these technical inquiries is provided in Table 6. Sixteenth Quarter statistics are included in both tables.

During this annual-report period, MCIC received 399 requests for technical assistance of which 305 were processed and 94 were cancelled. The effective rate was essentially 76.4 percent. In the three preceding annual report periods (AMMRC TR 81-33/July 1981, AMMRC TR 80-33/July 1980, and AMMRC TR 79-43/July 1979), the effective rates were 69.2, 76.7, and 84.8 percent, respectively. Despite the improved showing over last year, the effective rate continues to illustrate the problem for potential MCIC users in expediting charges for technical information from information analysis centers.

**TABLE 4. PUBLICATION STATISTICS OF THE CURRENT AWARENESS
BULLETIN FOR THE PERIOD, MAY 1981-APRIL 1982**

| Quarter | Issue No. | Date | No. of Pages | Number of References Cited | | | Total |
|-------------|-----------|----------|--------------|----------------------------|----------|-----------|-------|
| | | | | Metals | Ceramics | Corrosion | |
| 1 | 99 | 5-22-81 | 16 | 13 | — | 3 | 16 |
| | 100 | 6-26-81 | 12 | 15 | — | 3 | 18 |
| | 101 | 7-24-81 | 12 | 13 | — | 6 | 19 |
| | Total | | 40 | 41 | — | 12 | 53 |
| 2 | 102 | 8-31-81 | 12 | 11 | 5 | 2 | 18 |
| | 103 | 9-25-81 | 12 | 9 | — | 3 | 12 |
| | 104 | 10-23-81 | 11 | 10 | 1 | 2 | 13 |
| | Total | | 35 | 30 | 6 | 7 | 43 |
| 3 | 105 | 11-27-81 | 12 | 10 | 2 | 6 | 18 |
| | 106 | 12-24-81 | 15 | 13 | — | 4 | 17 |
| | 107 | 1-29-82 | 11 | 10 | — | 5 | 15 |
| | Total | | 38 | 33 | 2 | 15 | 50 |
| 4 | 108 | 2-26-82 | 12 | 8 | — | 3 | 11 |
| | 109 | 3-26-82 | 8 | 10 | — | 1 | 11 |
| | 110 | 4-30-82 | 8 | 10 | — | 1 | 11 |
| | Total | | 28 | 28 | — | 5 | 33 |
| Grand Total | | | 141 | 132 | 8 | 39 | 179 |
| (Percent) | | | | (73.7) | (4.4) | (21.8) | |

TABLE 5. TECHNICAL INQUIRY STATISTICS FOR THE PERIOD, MAY 1981-APRIL 1982

| Category | Number of Inquiries Per Quarter | | | | | | | | | | | | Annual Total No. (Percent) |
|--|---------------------------------|------------|-------|------------|------------|-------|-----------|----------|-------|-----------|------------|-------|-------------------------------|
| | Thirteenth | | | Fourteenth | | | Fifteenth | | | Sixteenth | | | |
| | SC | NC | Total | SC | NC | Total | SC | NC | Total | SC | NC | Total | |
| Industrial | 22 | 40 | 62 | 12 | 59 | 71 | 10 | 47 | 57 | 17 | 40 | 57 | 247 (81.0) |
| Government | - | 13 | 13 | - | 5 | 5 | - | 6 | 6 | - | 17 | 17 | 41 (13.4) |
| Academic | 1 | 2 | 3 | - | 2 | 2 | - | 2 | 2 | - | 2 | 2 | 9 (3.0) |
| Foreign | 1 | 1 | 2 | - | 1 | 1 | - | 3 | 3 | - | 2 | 2 | 8 (2.6) |
| Totals, No. | 24 | 56 | 80 | 12 | 67 | 79 | 10 | 58 | 68 | 17 | 61 | 78 | 305 |
| Quarterly, % | 30.0 | 70.0 | 26.2 | 15.2 | 84.8 | 25.9 | 14.7 | 85.3 | 22.3 | 21.8 | 20.0 | 25.6 | (100.0) |
| On Annual Basis, % | 7.9 | 18.3 | | 3.9 | 22.0 | | 3.3 | 19.0 | | 5.6 | | | |
| SC(a) Income, \$7,861 | 2,280 | | | 986 | | | 985 | | | 3,630 | | | |
| NC(b) Credit, \$12,100 | | 2,800 | | | 3,350 | | | 2,900 | | | 3,050 | | |
| Cancelled(c) Inquiries Credit, \$4,700 | | 1,500 (30) | | | 1,300 (26) | | | 800 (16) | | | 1,100 (22) | | (94) |
| Quarter Subtotals, \$24,701 | | | 6,590 | | | 5,636 | | | 4,686 | | | 7,780 | |
| Type of Response | | | | | | | | | | | | | |
| Technical (non-biblio.) | 11 | 52 | 63 | 4 | 58 | 62 | 1 | 44 | 45 | - | 44 | 44 | 214 (70.16) |
| Technical (bibliographic) | 13 | 4 | 17 | 8 | 9 | 17 | 9 | 14 | 23 | 17 | 17 | 34 | 91 (29.84) |
| Quarter Totals | 24 | 56 | 80 | 12 | 67 | 79 | 10 | 58 | 68 | 17 | 61 | 78 | 305 |
| SC Bibliographic Inq. | | | | | | | | | | | | | 47 |
| NC Bibliographic Inq. | | | | | | | | | | | | | 44 |

(a) SC - Service Charge (b) NC - No Charge (c) Numbers of cancelled inquiries are given in brackets.

**TABLE 6. CLASSIFICATION OF TECHNICAL INQUIRIES PROCESSED BY MCIC
DURING THE PERIOD MAY 1981-APRIL 1982**

| Classification | Number of Inquiries Per Quarter | | | | | | | | Annual Total | |
|------------------------|---------------------------------|---------|------------|---------|-----------|---------|-----------|---------|--------------|---------|
| | Thirteenth | | Fourteenth | | Fifteenth | | Sixteenth | | No. | Percent |
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent | | |
| Materials | | | | | | | | | | |
| Metals | 69 | 86.3 | 71 | 89.9 | 65 | 95.6 | 66 | 84.6 | 271 | 88.9 |
| Ceramics | 8 | 10.0 | 8 | 10.1 | 3 | 4.4 | 12 | 15.4 | 31 | 10.1 |
| Composites(a) | 3 | 3.7 | — | — | — | — | — | — | 3 | 1.0 |
| Totals | 80 | | 79 | | 68 | | 78 | | 305 | |
| Technical Scope | | | | | | | | | | |
| Properties | 37 | 46.3 | 28 | 35.4 | 33 | 48.5 | 26 | 33.3 | 124 | 40.7 |
| Processing | 18 | 22.5 | 21 | 26.6 | 12 | 17.6 | 19 | 24.3 | 70 | 23.0 |
| Corrosion | 2 | 2.6 | 10 | 12.7 | 5 | 7.4 | 13 | 16.7 | 30 | 9.8 |
| Applications | 8 | 10.0 | 2 | 2.5 | 5 | 7.4 | 5 | 6.4 | 20 | 6.6 |
| Markets | 4 | 5.0 | 6 | 7.6 | 4 | 5.9 | 1 | 1.3 | 15 | 4.9 |
| Fundamental Behavior | 1 | 1.2 | 3 | 3.8 | 5 | 7.4 | 5 | 6.4 | 14 | 4.6 |
| Test Methods | 1 | 1.2 | 4 | 5.1 | 3 | 4.4 | 5 | 6.4 | 13 | 4.2 |
| Specifications | 8 | 10.0 | 1 | 1.3 | 1 | 1.4 | 2 | 2.6 | 12 | 3.9 |
| Foreign Equivalents | 1 | 1.2 | 2 | 2.5 | — | — | 1 | 1.3 | 4 | 1.3 |
| Friction & Wear | — | — | 2 | 2.5 | — | — | — | — | 2 | 0.7 |
| Contracts | — | — | — | — | — | — | 1 | 1.3 | 1 | 0.3 |

(a) Discontinued as a scope material after Thirteenth Quarter.

Of the completed inquiries, 63 were subject to a user charge, and 242 were answered without charge. *Many of the 305 technical inquiries were complex and multifaceted, although counted statistically as single inquiries.* Ordinarily each of the no-charge inquiries represented a minimal effort by an MCIC staff member or a Battelle engineer, requiring an hour or less of effort to provide a satisfactory answer. On the other hand, cancelled inquiries often require more MCIC effort in addition to the technical effort required to provide a cost estimate. Note that a cancelled inquiry is defined as one that has been priced (sometimes even processed during the cursory evaluation) but not completed because final authorization to proceed was never received by MCIC.

The charges for the 63 service-charge (SC) inquiries ranged from \$10 to \$1650 for a single inquiry and represent a total invoiced amount of \$7,861. (Actual income for this annual period was \$9,807.) The 242 no-charge (NC) inquiries credited at \$50 per inquiry, represent a cost of \$12,100; the 94 cancelled inquiries, also credited at \$50 per inquiry, represent a cost of \$4,700.

Listings of the specific requestors for whom assistance was provided and the Battelle-Columbus personnel who were directly involved in technical-inquiry services during the Sixteenth Quarter are given in Appendices C and B, respectively, in this report. Inquiry listings and personnel involved in inquiry services for the other quarterly periods are given only in appendix sections for previous quarterly reports.

Nontechnical Inquiries

Significant effort also is expended in answering a variety of queries unrelated to MCIC's technical scope. A statistical summary of the number of inquiry responses to the sectors of the user audience is given in Table 7.

TABLE 7. NONTECHNICAL INQUIRY RESPONSES

| User Audience | Approximate Nontechnical Inquiries Per Quarter | | | | Total | |
|------------------|---|-----|----|-------|-------|-----------|
| | 13 | 14 | 15 | 16 | No. | (Percent) |
| Government | 18 | 10 | 9 | 10 | 47 | (8.4) |
| Industrial | 103 | 127 | 60 | 97 | 387 | (69.4) |
| Academic | 12 | 16 | 13 | 13 | 54 | (9.7) |
| Foreign | 22 | 16 | 18 | 14 | 70 | (12.5) |
| | | | | Total | 558 | |

In the annual report period approximately 558 nontechnical inquiries were answered by MCIC management and supporting staff. Because of the nature of these inquiries, this is a conservative estimate of the actual nontechnical responses. Of these inquiries, 387 were industrial, 47 Government, 54 academic, and 70 foreign. Typical inquiries represent questions related to:

- Products and services of the Center
- Quotations on MCIC products/services
- Orders for MCIC reports/handbooks
- Information on CAB and its availability
- Request for TML, DMIC, and DCIC reports
- Identification and source of Government reports
- Requests for reference cited in publications
- Source for acquisition of journal articles
- Source(s) of technical information not in MCIC scope.

SPECIAL STUDIES/TASKS

This category covers tasks which can be described as "super" inquiries. The tasks, under separate funding by agencies of DoD through supplements to the basic MCIC contract, generally require a substantial amount of technical effort extending over a period of time. Each inquiry can involve one or more phases of study which are assigned to various research staff within Battelle. These tasks are monitored by MCIC whose combination of information and data resources and professional skills in pertinent fields often make it possible to save both time and costs in completing each effort. Through such assignments, the Government is able to capitalize further on the substantial investment it has made in the creation of the technical information services.

Table 8 presents a summary of the Special Studies which were active during this contract period. Task progress for the Sixteenth Quarter can be summarized as follows: new (6), completed (5), continuing (5), additional funding (3).

It is important to note that two Special Studies, continuous since the inception of the current MCIC contract, have been continued through this reporting period:

- Establishment and Operation of a Carbon/Carbon Composites Materials Data Base (U.S. Air Force and Navy Sponsorship)
- Preparation of Journal for Army Manufacturing Technology Data Base (U.S. Army/AMMRC)

Both of the programs continued to be well received by the technical community.

TABLE 8. SUMMARY OF SPECIAL STUDIES

| Title or Description | Contract Modification | Funding Level | Sponsoring Agency | Period of Performance |
|---|-----------------------|------------------------|-------------------------------------|---------------------------|
| Carbon/Carbon Composites Materials | | | | |
| Evaluate Data | P00002 | \$ 35,000 | Air Force/RPL | 1 May 1978 - 31 Oct 1978 |
| Establishment and Operation of Data Base | P00011 | 50,000 | Air Force/AFML | 5 Jan 1979 - (Continuing) |
| | P00012 | 80,000 | Navy/NAVSEA | |
| | P00022 | 50,000 | Air Force/RPL | |
| | P00022 | 55,000 | Air Force/AFML | |
| | P00025 | 65,000 | Navy/NAVSEA | |
| | P00030 | 110,000 | Air Force/AFFTC/PKA: Navy/NAVSEA | |
| | P00046 | 52,000 ⁽¹⁾ | Air Force/AFWAL/ACFB; AFFTC/PKX | |
| | | 1,009 ⁽²⁾ | | |
| Manufacturing Technology Plan | P00003/4 | 85,000 | Navy/NAEC | Completed Sep 1979 |
| | P00006 | 85,000 | Navy/NASC | |
| Silicon Nitride Properties | P00001 | 6,000 | AMMRC | Completed Dec 1978 |
| Technical Assistance in Establishment of Army Battlefield Systems Integration, Base Terminology Data Base | P00001 | 74,976 | AMMRC | Completed Apr 1980 |
| | P00013 | 3,024 | | |
| | P00017 | 28,750 | | |
| | P00021 | 50,000 | | |
| Preparation of Journal for Army Manufacturing Technology | P00005 | 34,370 | AMMRC | 4 Aug 1978 - (Continuing) |
| | P00009 | 95,346 | | |
| | P00015 | 11,246 | | |
| | P00018 | 127,000 | | |
| | P00021 | 22,500 | | |
| | P00030 | 153,385 | | |
| | P00036 | 153,748 | | |
| | P00050 | 164,857 ⁽¹⁾ | | |
| | | 28,940 ⁽²⁾ | | |
| | | 405 ⁽³⁾ | | |
| MTAG Support | P00028 | 28,773 | AMMRC | Completed Jan 1981 |
| | P00030 | 14,529 | | |
| | | 4,000 ⁽⁴⁾ | | |
| Publication of Proceedings of Tri-Service Corrosion Conference | P00008 | 7,855 | AMMRC | Completed Jun 1979 |
| | | 7,000 | ARRADCOM | |
| Technical Advisory Services for AMMRC and OUSDRE | P00005 | 8,500 | AMMRC | Completed Apr 1979 |
| Ship Structural Research and Development Requirements | P00007 | 20,000 | Navy/NSRDC | Completed Jun 1979 |
| Fourth Conference on Fibrous Composite in Structural Design | P00010 | 6,975 | AMMRC | Completed Mar 1981 |
| | - | 16,602 ⁽⁵⁾ | | |
| Third Army Materials Technology Conference on Ceramics for High-Performance Applications | P00013 | 24,985 | AMMRC | 2 Mar 1979 - 31 Jul 1982 |
| | | 16,646 ⁽⁵⁾ | | |
| Crack Arrest Development Plan | P00019 | 20,000 | Navy/NSRDC | Completed Oct 1980 |

TABLE 8. (Continued)

| Title or Description | Contract Modification | Funding Level | Sponsoring Agency | Period of Performance |
|---|-----------------------|--------------------------------|-------------------|---------------------------|
| CAD/CAM Technology Transfer (Phase I) | P00021 | 8,900 | AMMRC | Completed Apr 1980 |
| DoD Materials/Structural Technology Conference | P00027 | 20,000 | AFWAL | Completed Apr 1981 |
| | P00028 | 20,000 | Navy/NAVSEA | |
| | P00030 | 20,000 | AMMRC | |
| Welding Procedures for Marine Propellers | P00031 | 40,000 | Navy/NAVSEA | 1 Feb 1981 - 31 Aug 1982 |
| Technical Support for TACOM Manufacturing Technology Conference | P00037 | 8,196 12,905 ⁽⁶⁾ | AMMRC | Completed Aug 1981 |
| Use of Ceramics in Gun Barrels | P00038 | 17,000 1,700 ⁽¹⁾ | AMMRC | Completed Jan 1982 |
| Technical Review on Welding Fluxes for Titanium Alloys | P00039 | 20,000 | Navy/NSRDC | Completed Mar 1982 |
| MTAG 81 Technical Support | P00050 | 10,688 ⁽¹⁾ | AMMRC | Completed Oct 1981 |
| MTAG 83 Technical Support | P00050 | 5,420 ⁽¹⁾ | AMMRC | 29 Apr 1982 - 31 Dec 1983 |
| Automated Advanced Batch Metal Removal System | P00050 | 12,069 ⁽¹⁾ | AMMRC | Completed 30 Apr 1982 |

(1) Special task funding received in Sixteenth Quarter.

(2) Income previous quarters.

(3) Income for Sixteenth Quarter. Journal income includes subscriptions through 1981.

(4) Net from registration fees (after payment of MTAG Conference Expenses).

(5) Conference Registration Fees - required to cover conference expenses, publication of proceedings for authors and all attendees.

(6) Conference Registration Fees - required to cover conference expenses.

MARKETING AND PROMOTION

In accordance with DoD policy, a service charge program was initiated in 1972. Since that time 73 technical documents (not including CAB) have been generated and 67 are still being sold through MCIC's marketing program. At the present time marketing is being conducted by six outlets in addition to MCIC. Those agencies having a formal marketing agreement with MCIC include:

NTIS (worldwide)

American Ceramic Society

Metal Powder Industries Federation (U.S. only)

Neutrino/MRI (Japan)

Allied Publishers Private, Ltd. (India)

Aluminium Verlag GmbH (West Germany).

In this annual period (May 1981-April 1982), 2921 documents were sold for a projected income to MCIC of \$144,007. The documents included 1192 technical reports (\$54,000), 1630 handbooks/databooks (\$85,262), and 93 special documents (\$4,745).

During the Sixteenth Quarterly period, 580 documents were sold for a projected income to MCIC of \$28,313; included were 104 technical reports (\$3,049), 450 handbooks/databooks (\$24,034), and 26 special documents (\$1,230). The numbers of documents sold for the fourth year and 16th quarter are presented in Appendix D.

The rental or sale of the MCIC films entitled, "Scanning Fractures with the Electron Microscope", and "Ceramics and Metals in Medical Prosthetics" provided a gross income for the past year of only \$135 of which \$10 was received in the Sixteenth Quarterly period. No new MCIC films are planned for the future.

Experience has shown that the sale of MCIC's products and services requires an aggressive promotion effort. Consequently, MCIC has maintained a modest program within the limitations of resources available. The promotional efforts conducted during the Sixteenth Quarter are summarized in Table 9. A major revision of the MCIC "User's Guide and Publication List", made during this period, is now being used to respond to inquiries.

The promotional program will continue with special mailings, inserts in technical journals as book reviews, and special announcements in pertinent trade literature.

Promotional activities of the previous report periods are given in the prior quarterly reports in this annual period.

TABLE 9. PROMOTION EFFORTS OF MCIC PUBLICATIONS (SIXTEENTH QUARTER)

| Report No. | Short Title | Type of Promotion | Publication/Audience |
|---|--|--|---|
| MCIC-HB-03V3 | Handbook of International Alloys, Volume 3 - Aluminum | Book Review | Metal Construction Magazine February, 1982 |
| MCIC-81-42 | Corrosion Fatigue of Metals in Marine Environments | Full Page Ad | NTIS Abstract Newsletter; "Ocean Technology & Engineering", April 6, 1982 |
| AMTC-5 | Ceramics in High Performance Application-2, Army Materials Technology Conference | Book Review by the Engineering Societies Library | This review will appear in three technical journals: Chemical Engineering Progress, IEEE Spectrum, and Mechanical Engineering |
| MCIC-81-42 | Corrosion Fatigue of Metals in Marine Environments | Book Review | ASM Metal Abstracts and the New Technical Books Section of the February, 1982 ASM News (Circ. 46,000) |
| MCIC-74-23 | Corrosion of Metals in the Atmosphere | Booth Display | Display in booth at Conference of National Association of Corrosion Engineers, March 22-24, 1982 (5900 attendees) |
| MCIC-78-37 | Corrosion of Metals in Marine Environments | | |
| MCIC-81-42 | Corrosion Fatigue of Metals in Marine Environments | | |
| MCIC-81-43 | Technological Advances in Joining | Book Review | Welding Design and Fabrication Magazine February, 1982 (Circ. 13,000) |
| MCIC Report List and Users Guide (Major Revision) | Included with a Battelle Mailing to a purchased mailing list | Special Mailing | Welding Design and Fabrication subscribers list, March 19, 1982 (Circ. 13,000) |
| Aerospace Structural Metals Handbook and Structural Alloys Handbook | Handbooks formerly available from MPDC; now maintained by MCIC | CAB Insert | Mailed with MCIC Current Awareness Bulletin (CAB) No. 108, February, 1982 (Circ. 4,000) |
| MCIC-HB-06 MCIC-HB-08 | SEM/TEM Fractography and Electron Fractography Handbooks | Special Mailing | To 156 names compiled from the ASM Testing and Inspection Buyers Guide for 1982. Mailed March, 1982. |

Meetings Attended

In support of MCIC's program management, operation, and technical activities, personnel of both the Center and Battelle's Columbus Laboratories attended two meetings during this quarterly report period. The following meetings were attended in the Sixteenth Quarter; meetings attended during the Thirteenth through Fifteenth Quarters were given in the respective quarterly reports.

| <u>Personnel</u> | <u>Meeting</u> | <u>Location</u> | <u>Date</u> |
|-------------------------------------|---|----------------------|---------------|
| H. Mindlin | Discuss MCIC Activities | AMMRC | February 1982 |
| H. Pestel D. Johnson C. Green | Mid-Eastern Regional DTIC Users Training | Wright-Patterson AFB | April 1982 |

Fifteen meetings were attended during this annual period.

Visitors

The following government, industry, and foreign representatives visited MCIC during the annual period covered by this report. Several of the visits were related to special tasks; others were related to specific MCIC operations or for overviews of this program.

| <u>Name/Area of Interest</u> | <u>Company/Organization</u> |
|---|--------------------------------|
| Dr. E. Pedersen/MCIC Operations | Alborg University/Denmark |
| Cpt. D. A. Joslyn, Jr./Information-Handbooks | Foreign Tech. Div./WPAFB, Ohio |
| Industrial Group | MCIC/MPDC Operations |
| F. Shober/MCIC | Westinghouse Hanford |
| Dr. A. Friedberg/MCIC Ceramics-Handbooks | American Ceramic Society |
| J. Palmer, L. Hampton/MCIC/MPDC Information Databases | Anaconda Aluminum |
| H. Koenigsberg/MCIC Operations | Foreign Tech. Div./WPAFB, Ohio |
| Seven Visitors/Information Center Activities | Japan/Industrial |
| J. Graham, E. Ripling/Database Activities | NMAB Task Committee |
| D. Seitz/ManTech Journal | AMMRC |
| J. J. Noeth/MCIC | Defense Audit Service |
| Patzen Wu/Information Center Activities | STAG/Taiwan |

| <u>Name/Area of Interest</u> | <u>Company/Organization</u> |
|---|--|
| M. Ogawa, M. Hirai/Information Center Activities | Fujitsu/Japan |
| R. McNamara, M. Imos/Information Center Activities | General Dynamics-Convair |
| K. Tamura, H. Kaneko/Information Center Activities | Japan Information Center for Science & Technology |
| R. Bernier, D. Mowrer/Information Center Activities | Joint Technical Coordinating Group on Aircraft Survivability & Munitions Effectiveness |
| J. Young/MCIC Operations | Chemical Systems Laboratory |
| Dr. W. Nash/Laser Machining | University of Massachusetts |
| Dr. Ing Dathe/Database Activities | Betriebsforschungsinstitut, Data Bank Systems/Germany |

INCOME AND COST RECOVERY

In accordance with DoD policy, in January 1972 MCIC instituted a service charge program to recover part, or all, of the costs associated with the products and services of the Center. This income is intended to offset many costs and to provide for the maintenance and/or expansion of services to the DoD and the related technical community.

The financial performance of MCIC based on income is summarized in Table 10. The basic funding for this annual reporting period is given with the income recovery (detailed in Table 11). For the FY82 period (October 81 through April 82) covered by this report, the available basic funding has been reduced approximately 7.2 percent. (For FY82, the funding cut was 12.3 percent.)

The two prime sources of income to MCIC are the sale of publications and services for the completion of special projects/tasks. For the fourth year of the current contract, the direct income from the sale of MCIC reports and handbooks increased to \$108,307 as the result of a more aggressive sales effort and the introduction of several new reports. The income from the special studies/tasks remained relatively level over the past two years.

Effective 1 April 1982, MCIC assumed responsibility for the publication and maintenance of the Mechanical Properties Data Center's (MPDC) "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook". Annual income from sales associated with these Handbooks for 1981 was \$122,835 (from the last annual MPDC report, AMMRC TR 82-9, dated February 1982); hence, this income is now being credited to MCIC. \$22,581 was credited in the Sixteenth Quarter.

Effective 1 May 1982, the cost of some of the publications will be increased to cover increased mailing and handling costs.

TABLE 10. SUMMARY OF BASIC FUNDING AND COST RECOVERY FOR MAY 1981 THROUGH APRIL 1982

| Contract Modification | Purpose | Period Covered | No. of Months | Amount, \$ | Annual Rate, \$ | Portion Applied to Current Year, \$ | Direct Income, \$ (Ref Table 11) | Percent Recovery |
|--------------------------|----------|----------------|-------------------------------|------------|--------------------|--|-------------------------------------|---------------------|
| 32 | MCIC | May 81-Sep 81 | 5 | 314,457 | 755,000 | 314,457 | | |
| 39 | MCIC | FY 82 | 12 | 56,858 | | | | |
| 40/41 | MCIC | FY 82 | 12 | 80,000 | 662,358 | 386,376 | | |
| 44 | MCIC | FY 82 | 12 | 225,000 | | | | |
| 49 | MCIC | FY 82 | 12 | 320,500 | | | | |
| | | | Total — Basic MCIC Operations | | | 700,833 | 593,028 | 84.6 |
| 48 | ASMH/SAH | Apr-Sep 82 | 6 | 56,286 | | 9,381 | 22,581 | |
| | | | Total — Including ASMH/SAH | | | 710,213 | 615,609 | 86.7 |

TABLE 11. INCOME SUMMARY FOR ANNUAL PERIOD (MAY 1981-APRIL 1982)

| Product/Service | Income, \$ | | | | Annual Total |
|------------------------------|--------------|--------------|--------------|--------------|-----------------|
| | 13th Quarter | 14th Quarter | 15th Quarter | 16th Quarter | |
| <u>Direct Income(a)</u> | | | | | |
| Publications | | | | | |
| Reports | 2,954 | 7,848 | 18,977 | 12,637 | 42,416 |
| Handbooks | 9,212 | 18,788 | 13,172 | 23,655 | 64,827 |
| Films | — | — | 125 | 10 | 135 |
| NTIS | 1,836 | 4,633 | — | — | 6,469 |
| ASMH/SAH(c) | — | — | — | 22,581(c) | 22,581 |
| Inquiry Services | 7,396 | 585 | 545 | 375 | 8,901 |
| Special Studies/Tasks | 170,344 | 49,759 | 2,112 | 246,919 | 469,134 |
| Miscellaneous(d) | <u>63</u> | <u>220</u> | <u>405</u> | <u>458</u> | <u>1,146</u> |
| Total | 191,805 | 81,833 | 35,336 | 306,635 | 615,609 |
| <u>Indirect Income(b)</u> | | | | | |
| Technical Assistant | — | — | — | — | — |
| Other Contracted Activities | — | — | 5,800 | — | 5,800 |
| In-House Inquiry Services(e) | <u>565</u> | <u>475</u> | <u>700</u> | <u>2,872</u> | <u>4,612</u> |
| Total | 565 | 475 | 6,500 | 2,872 | <u>10,412</u> |
| Grand Total | | | | | \$626,021 |

(a) Actual income credited directly to contract from sale of products and services as shown.

(b) Constitutes (1) separately contracted studies for either government or industrial sponsors and (2) costs of services provided to in-house programs; see Appendix B for identification.

(c) ASMH and SAH acquired 1 April, 1982 after close of MPDC.

(d) Special publications or products, listed in Appendix D.

(e) Services provided to Battelle personnel with charges directly to a project other than MCIC. Amounts are estimates based on time.

Mailings

Payment of postage costs for MCIC mailings was effective May 1978 per instructions from the Defense Logistics Agency. During the Sixteenth Quarter, 13,345 pieces of mail were processed through the mail facility of Battelle's Columbus Laboratories at a cost of \$2,110.88; the mailings included 1,255 at First Class rate, 10,179 at Bulk rate, and 1,911 at Air Printed Matter or Fourth Class Book rate. The bulk rate mailing was for the Current Awareness Bulletin.

A detailed accounting of the postal activity and costs for the annual period (May 1981-April 1982) is given in Table 12. A total of 54,716 pieces of mail was processed at a mailing cost of \$8,718.92.

TABLE 12. ANNUAL POSTAGE STATISTICS (MAY 1981-APRIL 1982)

| MCIC Operation | Number of Pieces | | | Cost, \$ |
|-----------------------|------------------|-----------|-----------|------------|
| | 1st Class | Book Rate | Bulk Mail | |
| Info Input | 359 | 12 | — | \$ 84.79 |
| Technical Inquiries | 147 | 2 | — | 103.63 |
| CAB | — | — | 40,631 | 1,234.19 |
| ManTech Journal | 345 | 2,211 | — | 2,657.56 |
| Marketing & Promotion | 1,652 | 1,816 | 6,748 | 4,243.05 |
| Administration | 524 | 6 | — | 213.96 |
| C/C Composites | 263 | — | — | 181.74 |
| | 3,290 | 4,047 | 47,379 | \$8,718.92 |

Future Planning

The basic operational procedures that have been developed by Battelle through its operation of the Metals and Ceramics Information Center have permitted the effective continuation of the key functions of this Center. Pertinent and timely services to the Department of Defense and its technical community have been and will be continued within the time and resources available for MCIC's operation.

The recent, continuing problems of rising costs and a constant level of funding have been exacerbated by a budget reduction for FY82. The increase in sales income has not been sufficient to offset the rising costs, resulting in a further tightening of MCIC operations. Figure 2 (an update from last year's annual report) graphically puts the overall problem in perspective.

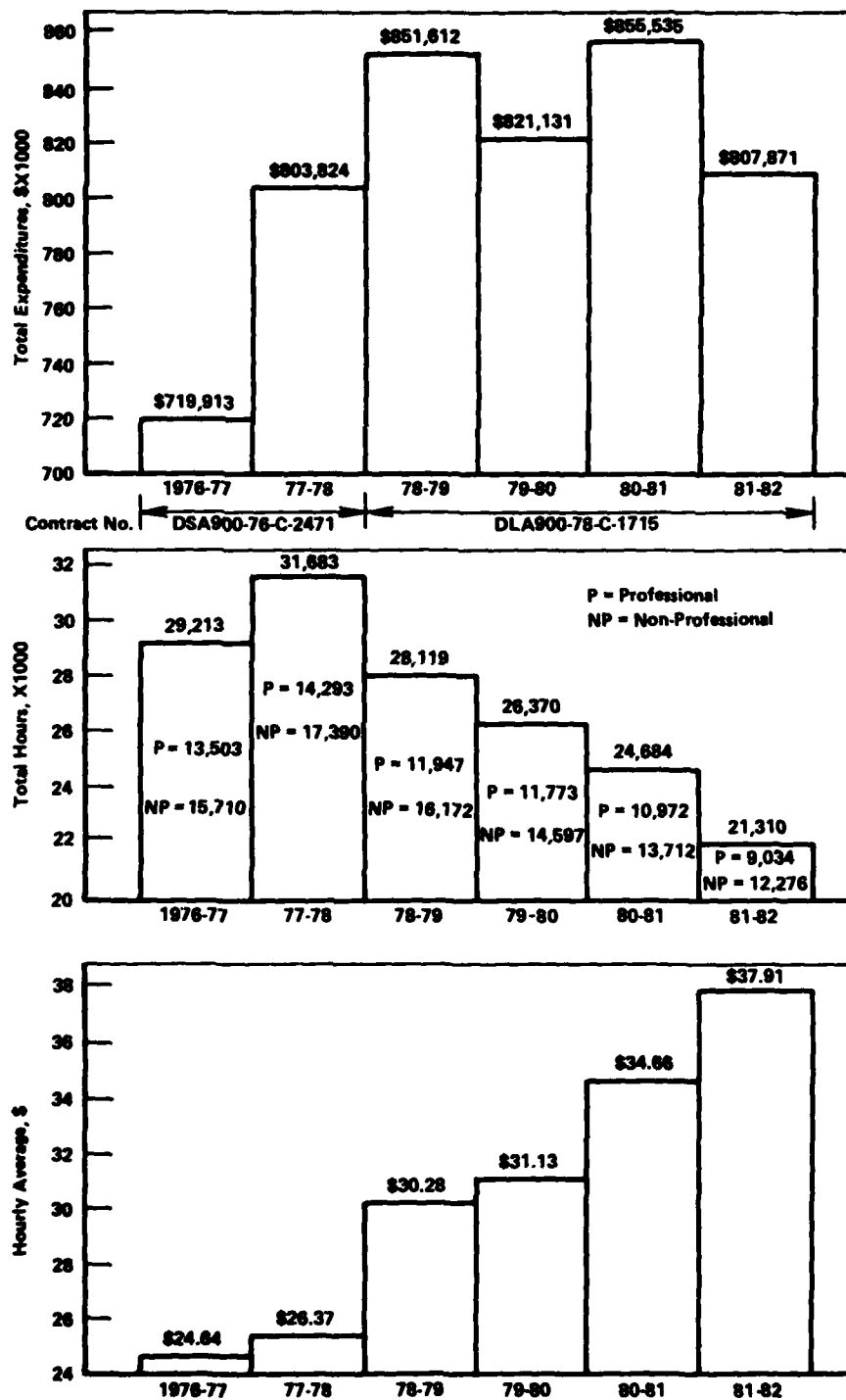


FIGURE 2. SIX-YEAR FINANCIAL SUMMARY OF MCIC BASIC OPERATIONS

Several specific actions have been taken to reduce overall project costs:

1. Reduced rate of accessioning of new data — resulting in a growing backlog of data to be revised and entered into the database.
2. Elimination of MCIC handbook efforts. With the relatively high cost to produce a handbook, the publication and printing of MCIC-authored handbooks has been suspended pending review of the FY83 budgets. Only the ASHM and SAH will be handled by MCIC.
3. Limitation of technical input to "Current Awareness Bulletin" (CAB), restricting input primarily to DoD-related efforts has enabled the CAB staff to maintain quality input with constant funding.
4. Delay of maintenance items. Ongoing tasks related to both the library and database maintenance have been suspended pending availability of resources.

In addition to the maintenance of the technical quality of MCIC's products and services, future activities will assure cost-effective utilization of contract funds to attain MCIC's goals. The scope of MCIC's operation is being reassessed on a regular basis to maintain efforts within the available financial resources.

PRECEDING PAGE DOCUMENT FILMED

APPENDIX A

CONTRACT STATUS REPORTS

TABLE A-1. FINANCIAL STATISTICS (SIXTEENTH QUARTER)

| INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT | | NAME OF INFORMATION ANALYSIS CENTER Metals & Ceramics Information Center | | | QUARTER ENDING April 30, 1982 | | CUMULATIVE THRU | |
|--|-----------------------------|---|---------------------------|-------|----------------------------------|--------------|-----------------|------------|
| AREA TITLE | OUTPUT UNITS PRODUCED | MANHOURS EXPENDED | | | COSTS INCURRED | | | INCOME (d) |
| | | PRO: (b) FESSIONAL | NON PRO: (a) FESSIONAL | TOTAL | DIRECT (b) | INDIRECT (c) | TOTAL | |
| 1 ACQUISITION AND INPUT OF SOURCE INFORMATION | | 650 | 1,194 | 1,844 | 22,757 | 33,004 | 55,761 | |
| a. DOCUMENTS ACQUIRED | 971 | | | | | | | |
| b. DOCUMENTS REVIEWED | 971 | | | | | | | |
| c. DOCUMENTS CATALOGED | 755 | | | | | | | |
| 2 TECHNICAL INQUIRY RESPONSES PROVIDED | 44 | 342 | 134 | 476 | 8,971 | 12,214 | 21,185 | 75 |
| 3 BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED | 34 | — | — | — | — | — | — | 300 |
| 4 HANDBOOKS DATA BOOKS COMPLETED | | 163 | 111 | 274 | 3,805 | 7,539 | 11,344 | 46,246 |
| a. NEW CHAPTERS PAGES COMPLETED | — | | | | | | | |
| b. REVISED CHAPTERS/PAGES COMPLETED | — | | | | | | | |
| c. DATA SETS COMPILED | — | | | | | | | |
| 5 STATE-OF-THE-ART STUDIES COMPLETED | 0 | 218 | 6 | 224 | 5,717 | 8,309 | 14,026 | 13,095 |
| 6 CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED | — | — | — | — | — | — | — | — |
| 7 CURRENT AWARENESS AND PROMOTION EFFORTS | | 548 | 1,248 | 1,796 | 21,808 | 47,843 | 69,651 | — |
| a. NUMBER NEWSLETTERS AND OR ANNOUNCEMENTS PUBLISHED (f) | 3/9 | | | | | | | |
| b. NUMBER MEETINGS CONFERENCES ETC SUPPORTED | 2 | | | | | | | |
| 8 OTHER Special Tasks (g) | 2 | 1,077 | 511 | 1,588 | 26,644 | 68,826 | 95,470 | 246,919 |
| 9 MANAGEMENT AND SUPPORT | | 265 | 290 | 555 | 11,067 | 15,689 | 26,756 | |
| 10 UNASSIGNABLE INDIRECT COSTS Contractual Fee | | — | — | — | — | 11,387 | 11,387 | |
| 11 TOTAL | | 3,263 | 3,494 | 6,757 | 100,769 | 204,811 | 305,580 | 306,635 |

FOOTNOTES FOR TABLE A-1

- (a) According to Battelle definition of personnel*
- (b) Cost of staff time directly related to MCIC operations and special studies/tasks*
- (c) Costs other than staff time*
- (d) Actual income received in quarterly period. See Table 11 for complete breakdown. Items on lines 2, 4, 5 include prorated distribution of NTIS income; line 8 includes subscriptions, registration fees, and MIPR'd funds for special tasks*
- (e) Three "Current Awareness Bulletins"*
- (f) One NTIS advertisement, four book reviews, one booth display, two special mailings, and one CAB insert (see Table 9)*
- (g) Reference Table 8 for breakdown and listing of tasks*

TABLE A-2. FOURTH ANNUAL

| INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT | | NAME OF INFORMATION ANALYSIS CENTER Metals & Ceramics Information Center | | | QUARTER ENDING | | CUMULATIVE THRU May 1981-April 1982 | |
|--|-----------------------------|---|-----------------------|--------|----------------|----------|--|---------|
| AREA TITLE | OUTPUT UNITS PRODUCED | MANHOURS EXPENDED | | | COSTS INCURRED | | | INCOME |
| | | PRO- FESSIONAL | NON-PRO- FESSIONAL | TOTAL | DIRECT | INDIRECT | TOTAL | |
| 1. ACQUISITION AND INPUT OF SOURCE INFORMATION | | 2,955 | 4,871 | 7,826 | 90,525 | 134,932 | 225,457 | |
| a. DOCUMENTS ACQUIRED | 3,990 | | | | | | | |
| b. DOCUMENTS REVIEWED | 3,990 | | | | | | | |
| c. DOCUMENTS CATALOGED | 3,343 | | | | | | | |
| 2. TECHNICAL INQUIRY RESPONSES PROVIDED | 232 | 1,186 | 506 | 1,692 | 30,000 | 40,977 | 70,977 | 9,232 |
| 3. BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED | 73 | - | - | - | - | - | - | 575 |
| 4. HANDBOOKS/DATA BOOKS COMPLETED | | 547 | 149 | 696 | 11,400 | 42,886 | 54,286 | 91,275 |
| a. NEW CHAPTERS/PAGES COMPLETED | 26/1116 | | | | | | | |
| b. REVISED CHAPTERS/PAGES COMPLETED | - | | | | | | | |
| c. DATA SETS COMPILED | - | | | | | | | |
| 5. STATE-OF-THE-ART STUDIES COMPLETED | 3 | 1,011 | 613 | 1,624 | 19,812 | 54,142 | 73,954 | 45,173 |
| 6. CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED | - | - | - | - | - | - | - | - |
| 7. CURRENT AWARENESS AND PROMOTION EFFORTS | | 2,150 | 4,094 | 6,244 | 76,860 | 147,756 | 224,616 | 220 |
| a. NUMBER NEWSLETTERS AND/OR ANNOUNCEMENTS PUBLISHED | 14/21 | | | | | | | |
| b. NUMBER MEETINGS, CONFERENCES ETC SUPPORTED | 15 | | | | | | | |
| 8. OTHER Special Tasks | 3 | 4,798 | 1,862 | 6,660 | 107,291 | 291,351 | 398,642 | 469,134 |
| 9. MANAGEMENT AND SUPPORT | | 1,185 | 2,043 | 3,228 | 50,403 | 74,585 | 124,988 | |
| 10. UNASSIGNABLE INDIRECT COSTS Contractual Fee | | - | - | - | - | 50,889 | 50,889 | |
| 11. TOTAL | | 13,832 | 14,128 | 27,960 | 386,291 | 837,518 | 1,223,809 | 615,609 |

TABLE A-3. FOUR-YEAR TOTAL

| INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT | | NAME OF INFORMATION ANALYSIS CENTER Metals & Ceramics Information Center | | | QUARTER ENDING | | CUMULATIVE THRU April 30, 1982 | |
|--|-----------------------------|---|-----------------------|---------|----------------|-----------|-----------------------------------|-----------|
| AREA TITLE | OUTPUT UNITS PRODUCED | MANHOURS EXPENDED | | | COSTS INCURRED | | | INCOME |
| | | PRO- FESSIONAL | NON-PRO- FESSIONAL | TOTAL | DIRECT | INDIRECT | TOTAL | |
| 1. ACQUISITION AND INPUT OF SOURCE INFORMATION | | 13,885 | 22,805 | 36,690 | 365,909 | 527,963 | 893,872 | |
| a. DOCUMENTS ACQUIRED | 16,167 | | | | | | | |
| b. DOCUMENTS REVIEWED | 16,167 | | | | | | | |
| c. DOCUMENTS CATALOGED | 14,225 | | | | | | | |
| 2. TECHNICAL INQUIRY RESPONSES PROVIDED | 887 | 4,894 | 2,190 | 7,084 | 110,418 | 146,184 | 256,602 | 51,444 |
| 3. BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED | 229 | - | - | - | - | - | -(a) | 575 |
| 4. HANDBOOKS/DATA BOOKS COMPLETED | | 4,428 | 2,715 | 7,143 | 77,114 | 199,104 | 276,218 | 216,930 |
| a. NEW CHAPTERS/PAGES COMPLETED | 43/2557 | | | | | | | |
| b. REVISED CHAPTERS/PAGES COMPLETED | 4/360 | | | | | | | |
| c. DATA SETS COMPILED | - | | | | | | | |
| 5. STATE-OF-THE-ART STUDIES COMPLETED | 8 | 4,379 | 3,517 | 7,896 | 85,506 | 198,512 | 284,018 | 177,459 |
| 6. CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED | - | - | - | - | - | - | - | - |
| 7. CURRENT AWARENESS AND PROMOTION EFFORTS | | 9,216 | 16,201 | 25,417 | 282,377 | 597,968 | 880,345 | 220 |
| a. NUMBER NEWSLETTERS AND/OR ANNOUNCEMENTS PUBLISHED | 93/97 | | | | | | | |
| b. NUMBER MEETINGS, CONFERENCES, ETC. SUPPORTED | 97 | | | | | | | |
| 8. OTHER Special Tasks | 22 | 24,314 | 9,370 | 33,684 | 425,793 | 1,253,004 | 1,678,797 | 1,997,079 |
| 9. MANAGEMENT AND SUPPORT | | 6,923 | 9,331 | 16,254 | 237,087 | 334,068 | 571,145 | |
| 10. UNASSIGNABLE INDIRECT COSTS Contractual Fee | | - | - | - | - | 218,732 | 218,732 | |
| 11. TOTAL | | 68,039 | 66,129 | 134,168 | 1,584,204 | 3,475,525 | 5,059,729 | 2,444,707 |

DSAH FORM 1261
AUG 74

EDITION OF JUN 72 IS OBSOLETE

(a) Included with Technical Inquiries in prior periods. Total not accurate for 4-year period.

APPENDIX B

**TECHNICAL PERSONNEL ASSOCIATED WITH
MCIC PRODUCTS AND SERVICES (SIXTEENTH QUARTER)**

B-1

FEBRUARY, MARCH, APRIL, 1982

APPENDIX B

TECHNICAL PERSONNEL ASSOCIATED WITH MCIC PRODUCTS AND SERVICES

| <u>Personnel</u> | <u>Titles</u> | <u>Area of Specialization</u> |
|-------------------|---------------------------|-------------------------------|
| <u>INQUIRIES</u> | | |
| Bartlett, E. S. | Senior Researcher | Superalloys Technology |
| Bennett, R. B. | Section Manager | Ceramics |
| Berry, W. E. | Section Manager | Corrosion |
| Browning, M. F. | Senior Researcher | Vapor Deposition Processes |
| Crosby, G. M. | Information Specialist | Information Handling |
| Endebrock, R. W. | Inquiries, Manager | Information Handling |
| Fletcher, E. E. | Senior Researcher | Magnetic Materials |
| Green, C. A. | Information Specialist | Information Handling |
| Groeneveld, T. P. | Senior Researcher | Steel Technology |
| Gurklis, J. A. | Staff Scientist | Coatings Technology |
| Hauser, D. | Staff Scientist | Metals Joining |
| Hucek, H. J. | Reports Manager | Information Handling |
| Jaske, C. E. | Senior Researcher | Fatigue Processes |
| Jelinek, F. J. | Associate Section Manager | Information Handling |
| Johnson, D. M. | Information Specialist | Information Handling |
| Kistler, C. W. | Senior Researcher | Cast Ceramics |
| Marschall, C. W. | Staff Scientist | Fundamental Metallurgy |
| Meiners, K. E. | Senior Researcher | Hot Isostatic Pressing |
| Mindlin, H. | MCIC Director | Information Handling |
| Morral, F. R. | Staff Consultant | Cobalt Technology |
| Pattee, H. E. | Senior Researcher | Metals Joining |
| Pestel, H. C. | Accessions Manager | Information Handling |
| Roach, D. B. | Senior Researcher | Stainless Steel Technology |
| Spinosa, E. D. | Senior Researcher | Glass Ceramics |
| Wood, R. A. | Senior Researcher | Titanium Technology |
| Wright, I. G. | Staff Scientist | Corrosion/Erosion |

| <u>Personnel</u> | <u>Titles</u> | <u>Area of Specialization</u> |
|--|---------------------------|--------------------------------------|
| <u>CURRENT AWARENESS BULLETIN</u> | | |
| Bartlett, E. S. | Senior Researcher | Superalloys, Refractory Metals |
| Berry, W. E. | Section Manager | Corrosion |
| Cialone, H. J. | Staff Scientist | Steels |
| Crosby, G. M. | CAB Associate Editor | Typing, Layout, Editing |
| Deel, O. L. | Staff Researcher | Fastening Technology/Lead |
| Endebrock, R. W. | Staff Engineer | CAB Manager/Editor |
| Gonser, B. W. | Staff Scientist | Tantalum Utilization |
| Gurklis, J. A. | Staff Scientist | Surface Finishing |
| Jelinek, F. J. | Associate Section Manager | CAB Editor |
| Patel, A. N. | Staff Scientist | Chromium Utilization |
| Pattee, H. E. | Senior Researcher | Metals Joining |
| Raman, R. V. | Staff Scientist | Lead-Rapid Solidification Conference |
| Williams, D. N. | Staff Scientist | Aluminum Technology |
| Noton, B. R. | Program Manager | Report on Conference |
| Tucker, T. R. | Staff Metallurgist | Metals Processing Article |
| Wills, R. R. | Section Manager | Report on Conference |

| | | |
|---------------------------------|--------------------|--------------------|
| <u>TECHNICAL REPORTS</u> | | |
| Carbonara, R. S. | Staff Engineer | Materials Analysis |
| Jaske, C. E. | Staff Engineer | Fatigue of Metals |
| Payer, J. H. | Staff Engineer | Corrosion |
| Balint, V. S. | Staff Metallurgist | Corrosion |
| Hauser, D. | Staff Engineer | Welding |
| Duckworth, W. H. | Staff Engineer | Ceramics |
| Pattee, H. | Staff Engineer | Welding |
| Tucker, T. R. | Staff Metallurgist | Process Metallurgy |
| Clauer, A. H. | Staff Engineer | Process Metallurgy |
| Meiners, K. E. | Staff Engineer | Process Metallurgy |
| Boyer, C. B. | Staff Engineer | Process Metallurgy |

| | | |
|-----------------------------------|--------------------|---|
| <u>HANDBOOKS/DATABOOKS</u> | | |
| Hucek, H. J. | Staff Metallurgist | Mechanical Properties and Physical Metallurgy of Ferrous Metals |
| Morral, F. R. | Consultant | Mechanical and Properties |
| Wood, R. A. | Staff Scientist | Titanium |

| | | |
|-------------------------------|------------|----------------------|
| <u>MANTECH JOURNAL</u> | | |
| Spalsbury, W. A. | Researcher | Information Analysis |

APPENDIX C

ORGANIZATIONS SERVED BY MCIC (SIXTEENTH QUARTER)

C-1

APPENDIX C

TABLE C-1. ORGANIZATIONS SERVICED BY MCIC

| Inquiry Number | Organization and Person | Bibliographic | Service Charge | No Charge |
|-------------------|--|---------------|-------------------|--------------|
| Industrial | | | | |
| 2267 | Mr. L. Gibson Buffalo Forge Co. Buffalo, NY | | | X |
| 2268 | Mr. R. Meckler Bowen, McLaughlin-York York, PA | X | | X |
| 2269 | Mr. J. Lindgren General Atomics San Diego, CA | X | | X |
| 2270 | Mr. J. Vagi Babcock & Wilcox Lynchburg, VA | X | | X |
| 2271 | Mr. A. Cox Flo Bend Steel Forge Tulsa, OK | | | X |
| 2273 | Mr. E. Hwang Hughes Aircraft Missile Group Canoga Park, CA | | | X |
| 2278 | Mr. W. Davenport Aerospace Corp. Los Angeles, CA | | | X |
| 2279 | Mr. W. Chard Battelle-Columbus | X | X | |
| 2280 | Mr. P. Frausto Battelle-Columbus | X | X | |
| 2281 | Mr. T. Gaspar Battelle-Columbus | X | X | |
| 2282 | Mr. R. Urban Western Co. Fort Worth, TX | | | X |
| 2283 | Mr. F. Beuhring Xaloy Pulaski, VA | | | X |

TABLE C-1. (Continued)

| Inquiry Number | Organization and Person | Bibliographic | Service Charge | No Charge |
|------------------------|--|---------------|-------------------|--------------|
| Industrial (Continued) | | | | |
| 2286 | Mr. P. Frausto Battelle-Columbus | X | | X |
| 2287 | Mr. F. Sykes Battelle-Columbus | X | X | |
| 2288 | Mr. J. Kissel Battelle-Columbus | X | | X |
| 2290 | Mr. F. Ames Brunswick Delant, FL | | | X |
| 2291 | Ms. D. Dieterle Grumman Aerospace Bethpage, NY | | | X |
| 2292 | Mr. J. Vargas Smith Tool Irvine, CA | | | X |
| 2295 | Mr. S. Goddard Consultant Columbus, OH | | | X |
| 2296 | Mr. D. Czimmek Newport News Ship Building Co. Newport News, VA | | | X |
| 2299 | Mr. P. Krishnaswamy Battelle-Columbus | X | X | |
| 2300 | Mr. M. Basehore Battelle-Columbus | X | X | |
| 2301 | Mr. K. Bodily E-Systems Salt Lake City, UT | X | X | |
| 2302 | Mr. B. Ryder Hewlett Packard Avondale, PA | | | X |

TABLE C-1. (Continued)

| Inquiry Number | Organization and Person | Bibliographic | Service Charge | No Charge |
|------------------------|---|---------------|-------------------|--------------|
| Industrial (Continued) | | | | |
| 2303 | Mr. H. Bragger Westinghouse/Hanford Richland, WA | | | X |
| 2304 | Mr. O. Deel Battelle-Columbus | | | X |
| 2305 | Dr. D. Smith Hughes Aircraft Los Angeles, CA | | | X |
| 2306 | Mr. R. Mullins ASTECH Santa Ana, CA | | | X |
| 2307 | Mr. L. Yeardley Yeardley Engineering Charleston, WV | | | X |
| 2308 | Mr. P. Lukacovic Western Silversmiths Hawthorne, CA | | | X |
| 2309 | Mr. J. Gasque Ramenco Manufacturing Ramona, CA | X | X | |
| 2311 | Mr. S. MacKenzie Emerson Electric/Electronics & Space St. Louis, MO | X | | X |
| 2312 | Mr. D. Jones Battelle-Columbus | X | X | |
| 2313 | Mr. H. Smallen Aerospace Corp. Los Angeles, CA | | | X |
| 2314 | Mr. V. Malhotra Bechtel Corp. San Francisco, CA | | | X |
| 2318 | Mr. R. Orban Superior Plating Columbus, OH | | | X |

TABLE C-1. (Continued)

| Inquiry Number | Organization and Person | Bibliographic | Service Charge | No Charge |
|------------------------|--|---------------|-------------------|--------------|
| Industrial (Continued) | | | | |
| 2319 | Mr. D. Meyers Piasecki Aircraft Corp. Philadelphia, PA | X | X | |
| 2320 | Mr. J. D'Andrea General Electric/Valley Forge Philadelphia, PA | | | X |
| 2321 | Mr. R. Fawley Solar Turbine San Diego, CA | X | X | |
| 2322 | Mr. D. McIntire Battelle-Houston | X | X | |
| 2323 | Mr. D. Grace ARCO Dublin, CA | | | X |
| 2324 | Mr. G. Hinshelwood Space Services International Washington, DC | | | X |
| 2325 | Mr. E. Provenzano AVCO/Everett Research Lab Everett, MA | | | X |
| 2326 | Mr. R. Burns Seaway Carrier Corp. Laguna Beach, CA | | | X |
| 2327 | Mr. B. Leis Battelle-Columbus | X | X | |
| 2328 | Mr. H. Domian Babcock & Wilcox Alliance, OH | X | | X |
| 2329 | Mr. T. Collings Battelle-Columbus | X | X | |
| 2330 | Mr. K. McCoy Battelle-Columbus | X | | X |

TABLE C-1. (Continued)

| Inquiry Number | Organization and Person | Bibliographic | Service Charge | No Charge |
|-------------------------------|--|---------------|----------------|-----------|
| Industrial (Continued) | | | | |
| 2331 | Mr. G. Notario Beech Aircraft Wichita, KS | X | | X |
| 2332 | Mr. T. Groeneveld Battelle-Columbus | X | X | |
| 2333 | Ms. S. Goodkin Battelle-Columbus | X | X | |
| 2334 | Mr. J. Hoegfeldt Honeywell Edina, MN | X | | X |
| 2335 | Mr. R. Cutler Terra Tech Corp. Salt Lake City, UT | X | | X |
| 2336 | Mr. M. Mandle Technomic Consultants Chicago, IL | X | | X |
| 2337 | Mr. F. Hoenisch Rohm & Haas Philadelphia, PA | | | X |
| 2340 | Mr. J. Beavers Battelle-Columbus | X | X | |
| 2342 | Mr. G. Bean Martin/Orlando Orlando, FL | X | | X |
| Government | | | | |
| 2264 | Mr. V. Truglio U.S. Naval Air Propulsion Trenton, NJ | | | X |
| 2265 | Mr. S. Sysum U.S. Navy Weapons Concord, CA | | | X |

TABLE C-1. (Continued)

| Inquiry Number | Organization and Person | Bibliographic | Service Charge | No Charge |
|------------------------|--|---------------|-------------------|--------------|
| Government (Continued) | | | | |
| 2272 | Mr. M. Levinsohn NASA/Goddard Space Flight Center Greenbelt, MD | | | X |
| 2274 | Mr. J. Jennings U.S. Naval Ocean Systems Center San Diego, CA | | | X |
| 2776 | Mr. J. Fedewitz U.S. Army Material Command Dover, NJ | | | X |
| 2277 | Mr. P. Smoot AMMRC Watertown, MA | | | X |
| 2285 | Mr. D. Chwirut Food & Drug Administration Silver Springs, MD | | | X |
| 2289 | Mr. G. Davis AFPRO DET 28 Caller #1615 (Air Force Plant Representative Office) Cincinnati, OH | | | X |
| 2293 | Mr. M. Levinsohn NASA/Goddard Space Flight Center Greenbelt, MD | | | X |
| 2294 | Mr. B. Fegley Smithsonian Astrophysical Observatory Cambridge, MA | X | | X |
| 2297 | Mr. P. Munafò NASA/Marshall Marshall Space Flight Center, AL | X | | X |
| 2298 | Mr. D. Anderson David Taylor Naval Ship R&D Center Annapolis, MD | | | X |
| 2315 | Mr. R. Rowe NASA/Marshall Marshall Space Flight Center, AL | | | X |

TABLE C-1. (Continued)

| Inquiry Number | Organization and Person | Bibliographic | Service Charge | No Charge |
|------------------------|---|---------------|-------------------|--------------|
| Government (Continued) | | | | |
| 2316 | Mr. J. McDaniel AF Rocket Propulsion Lab Edwards AFB, CA | | | X |
| 2317 | Mr. M. Nevitt Argonne National Lab Argonne, IL | | | X |
| 2339 | Mr. Ray Holanda NASA/Lewis Research Center Cleveland, OH | | | X |
| 2341 | Mr. M. Levinsohn NASA/Goddard Space Flight Center Greenbelt, MD | | | X |
| Academic | | | | |
| 2266 | Ms. M. Arnold Ohio State University Library Columbus, OH | | | X |
| 2275 | Dr. W. Nash University of Massachusetts Amherst, MA | X | | X |
| Foreign | | | | |
| 2284 | Ms. C. Vion ABBC Montreal, Canada | X | | X |
| 2310 | Mr. K. Narasimhan International Nickel Toronto, Canada | | | X |

PRECEDING PAGE BLANK NOT FILMED

APPENDIX D

SALES OF MCIC REPORTS, HANDBOOKS, AND SPECIAL REPORTS

Fourth Year Annual Sales — Tables D-1, D-2, D-3

Sixteenth Quarter Sales — Tables D-4, D-5, D-6

TABLE D-1. MCIC ANNUAL PUBLICATIONS LISTING

For Period 05/01/81 Through 04/30/82

| PUBLICATION NUMBER | DATE | DOCUMENT | TITLE | NUMBER SOLD (NTIS) | NUMBER SOLD (MCIC) | NUMBER SOLD (TOTAL) | NUMBER SOLD (CUMUL) |
|-----------------------|-------|--|-------|--------------------------|--------------------------|---------------------------|---------------------------|
| 7101 | AUG71 | EFF OF SURF COND ON MECH PROP TI+ALLOYS | | 0 | 14 | 14 | 1,010 |
| 7102 | DEC71 | EFF SHOT PEEN ON IMP, FAT+STK CORR PROP | | 6 | 22 | 28 | 1,193 |
| 7203 | JAN72 | NONTRADITIONAL MACHINING OF BERYLLIUM | | 0 | 1 | 1 | 252 |
| 7204 | JAN72 | CRACK BEHAVIOR IN D6AC STEEL | | 1 | 7 | 8 | 411 |
| 7205 | JAN72 | SYMP ON PROP OF ELECT DEP METALS | | 2 | 9 | 11 | 919 |
| 7206 | MAR72 | IMPURITY EFFECTS IN BERYLLIUM | | 1 | 2 | 3 | 151 |
| 7207 | JUN72 | OXIDATION OF Fe-NI + COBALT BASE ALLOYS | | 1 | 11 | 12 | 614 |
| 7208 | JUN72 | HOT CORROSION IN GAS TURBINES | | 1 | 14 | 15 | 673 |
| 7209 | JUL72 | BIBLIO ON FIBERS + COMP MATLS 1969-72 | | 2 | 10 | 12 | 682 |
| 7210 | SEP72 | SUPERALLOYS-PROCESSING (CONF PROC.) | | 2 | 13 | 15 | 636 |
| 7211 | SEP72 | BETA TITANIUM ALLOYS | | 1 | 13 | 14 | 360 |
| 7212 | DEC72 | FRAC ANAL BY SCANNING ELEC MICRO(OBS) | | 3 | 0 | 3 | 1,526 |
| 7313 | JAN73 | ADV IN JOINING TECH - 60'S + BEYOND(OBS) | | 2 | 0 | 2 | 791 |
| 7314 | JUN73 | MATLS FOR USE IN AIRCRAFT GAS TURB ENG | | 3 | 14 | 17 | 701 |
| 7315 | AUG73 | METALLURGY OF FUSION-WELD REPAIR | | 2 | 9 | 11 | 677 |
| 7316 | DEC73 | TITANIUM CASTING TODAY | | 3 | 17 | 20 | 317 |
| 7319 | DEC73 | PROC 72 TRI-SERV CONF ON CORROSION | | 0 | 5 | 5 | 371 |
| 7417 | APR74 | PROC 73 SYMP ELEC-DEP METAL SEL APPLI | | 0 | 9 | 9 | 416 |
| 7418 | FEB74 | METAL IMPLANT FOR ORTHO+DENT SURG(CBS) | | 0 | 0 | 0 | 477 |
| 7420 | JUN74 | PROPERTIES OF TEXTURED TITANIUM ALLOYS | | 2 | 10 | 12 | 256 |
| 7421 | JUL74 | CERA PROSTH APPL-ORTHO DENT+CARDIO(OBS) | | 0 | 4 | 4 | 245 |
| 7422 | JUL74 | NONDESTRUCTIVE TESTING OF BERYLLIUM | | 0 | 4 | 4 | 103 |
| 7423 | AUG74 | CORROSION OF METALS IN THE ATMOSPHERE | | 4 | 16 | 20 | 607 |
| 7424 | OCT74 | AUTOMATION IN WELDING (OBSOLETE) | | 1 | 1 | 2 | 285 |
| 7525 | MAR75 | CRACKS AT STRUCTURAL HOLES | | 2 | 8 | 10 | 268 |
| 7526 | JUN75 | TITANIUM INDUSTRY IN THE MID 70'S | | 0 | 9 | 9 | 359 |
| 7527 | JUL75 | PROC 74 GAS TURB MATLS N MAR ENVIR CONF | | 1 | 5 | 6 | 301 |
| 7628 | SEP76 | PROC + APPLI OF DEPL UNAN ALLOY PROD | | 8 | 5 | 13 | 120 |
| 7729 | MAR77 | ANNOT BIBLI BIL NIT FOR STRUC APPLI(OBS) | | 0 | 0 | 0 | 191 |
| 7730 | APR77 | DISPERSION STRENGTHENING OF METALS | | 0 | 9 | 9 | 292 |
| 7731 | MAY77 | LOW TEMP PROP SEL MATLS-BIBLIO w/DESCR | | 0 | 7 | 7 | 184 |
| 7732 | JUN77 | EFF RAP HEAT PKUP MATLS-BIBLIO w/DESCR | | 1 | 3 | 4 | 274 |
| 7733 | DEC77 | PROC 76 TRI-SERV CONF ON CORROSION | | 0 | 10 | 10 | 202 |
| 7734 | NOV77 | HOT ISOSTATIC PROCESSING | | 35 | 122 | 157 | 1,163 |
| 7835 | JAN78 | RHEOCASTING | | 0 | 12 | 12 | 250 |
| 7836 | MAR78 | PROC DARPA/NAVSEA CER GASTURB DEM | | 2 | 13 | 15 | 498 |
| 7837 | MAR78 | CORROSION OF METALS IN MARINE ENVIRO | | 14 | 26 | 40 | 780 |
| 7838 | NOV78 | BIBLIO ON FIBERS + COMPOSITE MATLS | | 0 | 28 | 28 | 302 |
| 7939 | APR79 | REVIEW METALL MI-STREN LOW-ALLOY STEEL | | 0 | 37 | 37 | 393 |
| 7940 | JUL79 | TRI-SERV CORROSION CONF-78 | | 1 | 14 | 15 | 203 |
| 7941 | JUL79 | SILICON NITRIDE BIB | | 2 | 19 | 21 | 213 |
| 8142 | JUL81 | CORR FATIGUE OF METALS IN MAR ENV | | 17 | 131 | 148 | 154 |
| 8143 | OCT81 | TECHNOLO, ADVAN, IN MATLS JOINING | | 0 | 224 | 224 | 224 |
| 8145 | OCT81 | RAPID SOLIDIFICATION TECHNOLOGY | | 0 | 177 | 177 | 177 |
| T O T A L | | | | 120 | 1,064 | 1,184 | 20,221 |

TABLE D-2. MCIC ANNUAL PUBLICATIONS LISTING

For Period 05/01/81 Through 04/30/82

| PUBLICATION NUMBER | DATE | DOCUMENT | TITLE | NUMBER SOLD (NTIS) | NUMBER SOLD (MCIC) | NUMBER SOLD (TOTAL) | NUMBER SOLD (CUMUL) |
|-----------------------|-------|---|-------|--------------------------|--------------------------|---------------------------|---------------------------|
| HB01 | DEC72 | DAMAGE TOLERANCE DESIGN HANDBOOK | | 0 | 37 | 37 | 1,376 |
| HB01S1 | DEC73 | 1ST SUPP TO D-T-D HANDBOOK | | 0 | 34 | 34 | 902 |
| HB01S2 | JAN75 | 2ND SUPP TO D-T-D HANDBOOK | | 0 | 44 | 44 | 801 |
| HB02 | DEC72 | TITANIUM ALLOYS HANDBOOK | | 11 | 38 | 59 | 1,201 |
| HB03 | OCT73 | FORGING--EQUIP, MATLS, + PRACTICES | | 15 | 146 | 151 | 1,797 |
| HB04 | NOV74 | HDBK ON MATLS FOR SUPERCONDUCTING MACH. | | 5 | 13 | 18 | 428 |
| HB04S1 | NOV75 | 1ST SUPP TO HDBK ON M-S-P | | 3 | 4 | 7 | 309 |
| HB04S2 | JAN77 | 2ND SUPP TO HDBK ON M-S-P | | 3 | 11 | 14 | 265 |
| HB05 | OCT80 | SOVIET ALLOY HANDBOOK -- 1980 ED | | 106 | 27 | 133 | 841 |
| HB05S1 | APR76 | 1ST SUPP TO SOVIET ALLOY HDBK(OBS) | | 0 | 0 | 0 | 306 |
| HB06 | DEC75 | SEM/TEM FRACTOGRAPHY HANDBOOK | | 1 | 22 | 23 | 985 |
| HB07V1 | MAR76 | ENGRC PROP DATA ON CERAMICS-V1 NITRIDES | | 8 | 148 | 156 | 702 |
| HB07V2 | AUG79 | ENGRC PROP DATA ON CERAMICS-V2 CARBIDES | | 15 | 164 | 179 | 409 |
| HB07V3 | JUL81 | ENGRC PROP DATA ON CERAMICS-V3 SiC/SiC | | 18 | 271 | 289 | 289 |
| HB08 | JUN76 | ELECTRON FRACTOGRAPHY HANDBOOK | | 2 | 5 | 7 | 462 |
| HB09V1 | NOV76 | HDBK OF INTNL ALLOY COMP+DESIG.-V1 TI | | 3 | 21 | 24 | 478 |
| HB09V2 | DEC78 | HDBK INTNL AL. COMP+DES- V2 SUPERMALLOY | | 2 | 25 | 27 | 440 |
| HB09V3 | OCT80 | HDBK INTNL AL. COMP+DES- V3 ALUMINUM | | 4 | 423 | 427 | 427 |
| T O T A L | | | | 196 | 1,434 | 1,630 | 12,417 |

TABLE D-3. MCIC ANNUAL PUBLICATIONS LISTING

For Period 05/01/81 Through 04/30/82

| PUBLICATION NUMBER | DATE | DOCUMENT | TITLE | NUMBER SOLD (NTIS) | NUMBER SOLD (MCIC) | NUMBER SOLD (TOTAL) | NUMBER SOLD (CUMUL) |
|-----------------------|-------|--|-------|--------------------------|--------------------------|---------------------------|---------------------------|
| AMTC 1 | OCT72 | AMCRC BKS - SOLID TECH | | 0 | 8 | 8 | 112 |
| AMTC 2 | NOV73 | AMCRC BKS - CERAMICS FOR HI PERF APPL I | | 0 | 22 | 22 | 94 |
| AMTC 3 | FEB74 | AMCRC BKS - PHY MET URAN ALLOYS | | 0 | 8 | 8 | 45 |
| AMTC 4 | SEP75 | AMCRC BOOKS - AMTC NO 4 - JOINING | | 0 | 22 | 22 | 340 |
| AMTC 5 | MAR77 | AMCRC BKS - CERAMICS FOR HI PERF APPL II | | 0 | 32 | 32 | 203 |
| CBD | | COMMENCE BUSINESS DAILY | | 0 | 1 | 1 | 1 |
| FILM 3 | | SCANNING ELECTRON MICROSCOPY | | 0 | 2 | 2 | 1 |
| HELRG2 | JUL76 | SURVEY ON MECH PROP ON RAPID HEATING | | 0 | 0 | 0 | 17 |
| HELRG3 | FEB78 | SURV ON MECH PROP ON RAPID HEAT HDBK | | 0 | 0 | 0 | 12 |
| NTC 78 | FEB78 | 1978 MATERIALS TECHNOLOGY REPORT | | 0 | 0 | 0 | 251 |
| SPIC | JUL79 | MISC REPORTS | | 0 | 0 | 0 | 117 |
| SR7501 | FEB75 | MATERIALS SHORTAGE WORKSHOP PROCEEDINGS | | 0 | 0 | 0 | 153 |
| SR7502 | JUL75 | BERYLLIUM-UTILIZATION/AVAILABILITY | | 0 | 0 | 0 | 1 |
| SR7606 | MAR76 | WORKSHOP ON GOVT POLICIES + PROGRAMS | | 0 | 0 | 0 | 288 |
| STC 76 | NOV76 | 1976 STRUCTURES TECHNOLOGY REPORT | | 0 | 0 | 0 | 352 |
| T O T A L | | | | 0 | 95 | 95 | 1,987 |

(N O T E) : NTIS DOES NOT SELL THESE DOCUMENTS.

TABLE D-4. MCIC QUARTERLY PUBLICATIONS LISTING

For Period 02/01/82 Through 04/30/82

| PUBLICATION NUMBER | DATE | DOCUMENT | | T I T L E | NUMBER SOLD (NTIS) | NUMBER SOLD (MCIC) | NUMBER SOLD (TOTAL) | NUMBER SOLD (CUMUL) |
|-----------------------|-------|--|-------|-----------|--------------------------|--------------------------|---------------------------|---------------------------|
| 7101 | AUG71 | EFF OF SURF COND ON MECH PROP II+ALLOYS | | | 0 | 3 | 3 | 1,010 |
| 7102 | DEC71 | EFF SHOT PEEN UN IMP, FAT+STR CORR PROP | | | 0 | 3 | 3 | 1,193 |
| 7203 | JAN72 | NONTRADITIONAL MACHINING OF BERYLLIUM | | | 0 | 1 | 1 | 252 |
| 7204 | JAN72 | CRACK BEHAVIOR IN D6AC STEEL | | | 0 | 1 | 1 | 411 |
| 7205 | JAN72 | SYMP ON PROP OF ELECT DEP METALS | | | 1 | 4 | 5 | 919 |
| 7206 | MAR72 | IMPURITY EFFECTS IN BERYLLIUM | | | 1 | 0 | 1 | 151 |
| 7207 | JUN72 | OXIDATION OF Fe-NI + COBALT BASE ALLOYS | | | 1 | 2 | 3 | 614 |
| 7208 | JUN72 | HOT CORROSION IN GAS TURBINES | | | 0 | 2 | 2 | 673 |
| 7209 | JUL72 | BIBLIO ON FIBERS + COMP MATLS 1969-72 | | | 0 | 3 | 3 | 682 |
| 7210 | SEP72 | SUPERALLOYS-PROCESSING (CONF PROC.) | | | 0 | 3 | 3 | 637 |
| 7211 | SEP72 | BETA TITANIUM ALLOYS | | | 0 | 5 | 5 | 360 |
| 7212 | DEC72 | FRAC ANAL BY SCANNING ELEC MICRO(OBS) | | | 0 | 0 | 0 | 1,526 |
| 7313 | JAN73 | ADV IN JOINING TECH - 60'S + BEYOND(OBS) | | | 0 | 0 | 0 | 791 |
| 7314 | JUN73 | MATLS FOR USE IN AIRCRAFT GAS TURB ENG | | | 2 | 3 | 5 | 701 |
| 7315 | AUG73 | METALLURGY OF FUSION-WELD REPAIR | | | 0 | 4 | 4 | 677 |
| 7316 | DEC73 | TITANIUM CASTING TODAY | | | 0 | 5 | 5 | 315 |
| 7319 | DEC73 | PROC 72 TRI-SERV CONF ON CORROSION | | | 0 | 0 | 0 | 371 |
| 7417 | APR74 | PROC 73 SYMP ELEC-DEP METAL SEL APPLI | | | 0 | 4 | 4 | 405 |
| 7418 | FEB74 | METAL IMPLANT FOR ORTHO+DENT SURG(OBS) | | | 0 | 0 | 0 | 477 |
| 7420 | JUN74 | PROPERTIES OF TEXTURED TITANIUM ALLOYS | | | 2 | 3 | 5 | 256 |
| 7421 | JUL74 | CERA PROSTH APPL-ORTHODONT+CARDIO(OBS) | | | 0 | 0 | 0 | 245 |
| 7422 | JUL74 | NONDESTRUCTIVE TESTING OF BERYLLIUM | | | 0 | 1 | 1 | 103 |
| 7423 | AUG74 | CORROSION OF METALS IN THE ATMOSPHERE | | | 0 | 5 | 5 | 607 |
| 7424 | OCT74 | AUTOMATION IN WELDING (OBSOLETE) | | | 0 | 0 | 0 | 285 |
| 7525 | MAR75 | CRACKS AT STRUCTURAL HOLES | | | 1 | 2 | 3 | 270 |
| 7526 | JUN75 | TITANIUM INDUSTRY IN THE MID 70'S | | | 0 | 3 | 3 | 359 |
| 7527 | JUL75 | PROC 74 GAS TURB MATLS N MAR ENVIR CONF | | | 1 | 1 | 2 | 300 |
| 7628 | SEP76 | PROC + APPLI OF DEPL UKAN ALLOY PROD | | | 4 | 1 | 5 | 118 |
| 7729 | MAR77 | ANNOT BIBLI SIL NIT FOR STRUC APPLI(OBS) | | | 0 | 0 | 0 | 191 |
| 7730 | APR77 | DISPERSION STRENGTHENING OF METALS | | | 0 | 2 | 2 | 292 |
| 7731 | MAY77 | LOW TEMP PROP SEL MATLS-BIBLIO W/DESCR | | | 0 | 1 | 1 | 185 |
| 7732 | JUN77 | EFF RAP HEAT PROP MATLS-BIBLIO W/DESCR | | | 0 | 0 | 0 | 274 |
| 7733 | DEC77 | PROC 76 TRI-SERV CONF ON CORROSION | | | 0 | 2 | 2 | 202 |
| 7734 | NOV77 | HOT ISOSTATIC PROCESSING | | | 3 | 13 | 16 | 1,145 |
| 7835 | JAN78 | RHEOCASTING | | | 0 | 5 | 5 | 250 |
| 7836 | MAR78 | PROC DARPA/NAVSEA CER CASTURB DEM | | | 0 | 5 | 5 | 496 |
| 7837 | MAR78 | CORROSION OF METALS IN MARINE ENVIR | | | 9 | 5 | 14 | 779 |
| 7838 | NOV78 | BIBLIO ON FIBERS + COMPOSITE MATLS | | | 0 | 9 | 9 | 300 |
| 7939 | APR79 | REVIEW METALL MI-STREN LOW-ALLOY STEEL | | | 0 | 12 | 12 | 392 |
| 7940 | JUL79 | TRI-SERV CORROSION CONF-78 | | | 1 | 5 | 6 | 203 |
| 7941 | JUL79 | SILICON NITRIDE 818 | | | 0 | 4 | 4 | 210 |
| 8142 | JUL81 | CORR FATIGUE OF METALS IN MAR ENV | | | 15 | 29 | 44 | 154 |
| 8143 | OCT81 | TECHNOLOGY, ADVAN, IN MATLS JOINING | | | 0 | 57 | 57 | 104 |
| 8145 | OCT81 | RAPID SOLIDIFICATION TECHNOLOGY | | | 0 | 29 | 29 | 177 |
| T O T A L | | | | | 41 | 237 | 278 | 20,062 |

D-3

TABLE D-5. MCIC QUARTERLY PUBLICATIONS LISTING

For Period 02/01/82 Through 04/30/82

| PUBLICATION NUMBER | DATE | D O C U M E N T | T I T L E | NUMBER SOLD (NTIS) | NUMBER SOLD (MCIC) | NUMBER SOLD (TOTAL) | NUMBER SOLD (CUMUL) |
|-----------------------|-------|---|-----------|--------------------------|--------------------------|---------------------------|---------------------------|
| HB01 | DEC72 | DAMAGE TOLERANT DESIGN HANDBOOK | | 0 | 13 | 13 | 1,375 |
| HB01S1 | DEC73 | 1ST SUPP TO D-T-D HANDBOOK | | 0 | 7 | 7 | 902 |
| HB01S2 | JAN75 | 2ND SUPP TO D-T-D HANDBOOK | | 0 | 7 | 7 | 801 |
| HB02 | DEC72 | TITANIUM ALLOYS HANDBOOK | | 6 | 8 | 14 | 1,201 |
| HB03 | OCT73 | FUNGING--EQUIP, MATLS, + PRACTICES | | 0 | 55 | 55 | 1,797 |
| HB04 | NOV74 | HDBK ON MATLS FOR SUPERCONDUCTING MACH. | | 0 | 9 | 9 | 428 |
| HB04S1 | NOV75 | 1ST SUPP TO HDBK ON M-S-M | | 0 | 2 | 2 | 304 |
| HB04S2 | JAN77 | 2ND SUPP TO HDBK ON M-S-M | | 0 | 3 | 3 | 265 |
| HB05 | OCT80 | SOVIET ALLOY HANDBOOK -- 1980 ED | | 4 | 3 | 7 | 841 |
| HB05S1 | APR76 | 1ST SUPP TO SOVIET ALLOY HDBK (DB8) | | 0 | 0 | 0 | 306 |
| HB06 | DEC75 | SEM/TEM PHACTOGRAPHY HANDBOOK | | 0 | 13 | 13 | 965 |
| HB07V1 | 4AR76 | ENGRG PHOP DATA ON CERAMICS-V1 NITRIDES | | 1 | 75 | 76 | 702 |
| HB07V2 | AUG79 | ENGRG PHOP DATA ON CERAMICS-V2 CARBIDES | | 2 | 78 | 80 | 409 |
| HB07V3 | JUL81 | ENGRG PHOP DATA ON CERAMICS-V3 SGLOXID | | 15 | 91 | 106 | 287 |
| HB08 | JUN76 | ELECTRON PHACTOGRAPHY HANDBOOK | | 1 | 1 | 2 | 462 |
| HB09V1 | NOV76 | HDBK OF INTNL ALLY COMP+DESIG.-V1 TI | | 2 | 8 | 10 | 478 |
| HB09V2 | DEC78 | HDBK INTNL AL, COMP+DES- V2 SUPERALLOY | | 2 | 6 | 8 | 440 |
| HB09V3 | OCT80 | HDBK INTNL AL, COMP+DES- V3 ALUMINUM | | 1 | 37 | 38 | 400 |
| T O T A L | | | | 34 | 416 | 450 | 12,383 |

TABLE D-6. MCIC QUARTERLY PUBLICATIONS LISTING

For Period 02/01/82 Through 04/30/82

| PUBLICATION NUMBER | DATE | D O C U M E N T | T I T L E | NUMBER SOLD (NTIS) | NUMBER SOLD (MCIC) | NUMBER SOLD (TOTAL) | NUMBER SOLD (CUMUL) |
|-----------------------|-------|--|-----------|--------------------------|--------------------------|---------------------------|---------------------------|
| AMTC 1 | UCT72 | AMMRC BKS - SOLID TECH | | 0 | 2 | 2 | 112 |
| AMTC 2 | NOV73 | AMMRC BKS - CERAMICS FOR HI PERF APPL I | | 0 | 5 | 5 | 94 |
| AMTC 3 | FEB74 | AMMRC BKS - PHY MET URAN ALLOYS | | 0 | 3 | 3 | 45 |
| AMTC 4 | SEP75 | AMMRC BOOKS - AMTC NO 4 - JOINING | | 0 | 7 | 7 | 340 |
| AMTC 5 | MAR77 | AMMRC BKS - CERAMICS FOR HI PERF APPL II | | 0 | 9 | 9 | 203 |
| CND | | COMMENCE BUSINESS DAILY | | 0 | 0 | 0 | 1 |
| FILM 3 | | SCANNING ELECTRON MICROSCOPY | | 0 | 1 | 1 | 1 |
| MLRG2 | JUL76 | SURVEY ON MECH PROP ON RAPID HEATING | | 0 | 0 | 0 | 17 |
| MLRG3 | FEB78 | SURV ON MECH PHOP ON RAPID HEAT HDBK | | 0 | 0 | 0 | 12 |
| NTC 78 | FEB78 | 1978 MATERIALS TECHNOLOGY REPORT | | 0 | 0 | 0 | 251 |
| SPEC | JUL79 | MISC REPURIS | | 0 | 0 | 0 | 117 |
| SR7501 | FEB75 | MATERIALS SHORTAGE WORKSHOP PROCEEDINGS | | 0 | 0 | 0 | 153 |
| SR7502 | JUL75 | BERYLLIUM-UTILIZATION/AVAILABILITY | | 0 | 0 | 0 | 1 |
| SR7606 | MAR76 | WORKSHOP ON GOVT POLICIES + PROGRAMS | | 0 | 0 | 0 | 288 |
| STC 76 | NOV76 | 1976 STRUCTURES TECHNOLOGY REPORT | | 0 | 0 | 0 | 352 |
| T O T A L | | | | 0 | 27 | 27 | 1,987 |

(N O T E) : NTIS DOES NOT SELL THESE DOCUMENTS.

Army Materials and Mechanics Research Center
Watertown, Massachusetts 02172
**ANNUAL REPORT OF THE METALS
& CERAMICS INFORMATION CENTER**
H. Mindlin, Metals & Ceramics
Information Center, Battelle-Columbus,
Columbus, Ohio

Technical Report AMMRC TR 82-45
July 1982
Contract DLA900-78-C-1715
May 1, 1981, to April 30, 1982

AD _____

UNCLASSIFIED
Unlimited Distribution

Key Words
Technical Information Center
DoD Information Analysis
Center
Metals
Ceramics
Information retrieval

This report reviews the continuing operations of the Metals and Ceramics Information Center for the Sixteenth Quarter and the annual period of May 1, 1981, through April 30, 1982. Activities and coverage of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included.

Army Materials and Mechanics Research Center
Watertown, Massachusetts 02172
**ANNUAL REPORT OF THE METALS
& CERAMICS INFORMATION CENTER**
H. Mindlin, Metals & Ceramics
Information Center, Battelle-Columbus,
Columbus, Ohio

Technical Report AMMRC TR 82-45
July 1982
Contract DLA900-78-C-1715
May 1, 1981, to April 30, 1982

AD _____

UNCLASSIFIED
Unlimited Distribution

Key Words
Technical Information Center
DoD Information Analysis
Center
Metals
Ceramics
Information retrieval

This report reviews the continuing operations of the Metals and Ceramics Information Center for the Sixteenth Quarter and the annual period of May 1, 1981, through April 30, 1982. Activities and coverage of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included.

Army Materials and Mechanics Research Center
Watertown, Massachusetts 02172
**ANNUAL REPORT OF THE METALS
& CERAMICS INFORMATION CENTER**
H. Mindlin, Metals & Ceramics
Information Center, Battelle-Columbus,
Columbus, Ohio

Technical Report AMMRC TR 82-45
July 1982
Contract DLA900-78-C-1715
May 1, 1981, to April 30, 1982

AD _____

UNCLASSIFIED
Unlimited Distribution

Key Words
Technical Information Center
DoD Information Analysis
Center
Metals
Ceramics
Information retrieval

This report reviews the continuing operations of the Metals and Ceramics Information Center for the Sixteenth Quarter and the annual period of May 1, 1981, through April 30, 1982. Activities and coverage of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included.

Army Materials and Mechanics Research Center
Watertown, Massachusetts 02172
**ANNUAL REPORT OF THE METALS
& CERAMICS INFORMATION CENTER**
H. Mindlin, Metals & Ceramics
Information Center, Battelle-Columbus,
Columbus, Ohio

Technical Report AMMRC TR 82-45
July 1982
Contract DLA900-78-C-1715
May 1, 1981, to April 30, 1982

AD _____

UNCLASSIFIED
Unlimited Distribution

Key Words
Technical Information Center
DoD Information Analysis
Center
Metals
Ceramics
Information retrieval

This report reviews the continuing operations of the Metals and Ceramics Information Center for the Sixteenth Quarter and the annual period of May 1, 1981, through April 30, 1982. Activities and coverage of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included.

DATE
ILMED
8